

حمل الآن

مجانا وحصريا

امتحانات رقم (1)

الترم الثاني



A Choose the correct answer:

- 1 Half of 2^{20} is $(2^{20} , 2^{19} , 2^{10} , 2^9)$
- 2 If Ahmed's age now is m years, then his age 2 years ago is years. $(m + 2 , 2 - m , m - 2 , 2m)$
- 3 $\frac{1}{5} = \dots\dots\dots\%$. $(10 , 20 , 40 , 50)$
- 4 If $x + y = 2$, then $2x + 2y = \dots\dots\dots$. $(2 , 4 , 6 , 8)$
- 5 If the expression: $x^2 + kx + 36$ is a perfect square, then $k = \dots\dots\dots$. $(\pm 6 , \pm 12 , 36 , -8)$
- 6 The multiplicative inverse of the number $(-2) - 1$ is $(2 , \frac{1}{2} , -\frac{1}{2} , -2)$
- 7 If $x^2 - y^2 = 28$, and $x + y = 4$, then $x - y = \dots\dots\dots$. $(4 , 28 , 32 , 7)$
- 8 $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots$. $(3 , 1 , -1 , -3)$
- 9 In the experiment of throwing a fair die once, then the probability of appearing an even prime number equals $(1 , \frac{1}{2} , \frac{2}{6} , \frac{1}{6})$

B Answer each of the following:

- 1 Factorize each of the following:

a) $x^2 - 4x - 45$

b) $x^3 + 64$

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- 2 Find in \mathbb{R} the S.S. of the equation: $2x^2 - 5x - 7 = 0$

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- 3 Simplify: $\frac{2^{2n+1} \times 3^{2n+1}}{6^{2n}}$

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- 4 If $x = 5$, $y = \sqrt{2}$, find in the simplest form the value of:

a) $x^3 y^2$

b) $(\frac{y}{x})^{-2}$

- 5 A box contains 6 white balls, 4 red balls and 2 blue balls. If a ball is drawn from the box randomly, find the probability that the drawn ball is:

a) White.

b) Red or blue.

c) Green

- 6 Find the value of x where $x \in \mathbb{Z}$ if: $\frac{7}{3} x^{-2} = 2 \frac{1}{3}$

- 7 A real number if you add it to its square, the result is 12, find that number.

A Choose the correct answer:

- 1 If the expression : $4x^2 + kx + 9$ is a perfect square, then $k =$
(12 , ± 12 , 6 , ± 6)
- 2 $\frac{3}{8} =$ % (375 , 37.5 , 3.75 , 735)
- 3 The probability of the impossible event is (0 , 1 , 2 , $\frac{1}{2}$)
- 4 Third of $3^{10} =$ (3^{20} , 3^{19} , 3^{10} , 3^9)
- 5 If $2^x = 3$, then $(16)^x =$ (18 , 16 , 81 , 6)
- 6 If $(x - 5)$ is a factor of the expression: $x^2 - 11x + 30$, then the other factor is
($x - 3$, $x - 5$, $x - 10$, $x - 6$)
- 7 When throwing a fair die once and observing the upper face, the probability of appearing an even number is (0 , 1 , $\frac{1}{2}$, $\frac{1}{6}$)
- 8 $(\sqrt{2} + 1)^9 (\sqrt{2} - 1)^9 =$ (-1 , 1 , 2 , -2)
- 9 $3^2 \times 2^2 =$ (6^4 , 6^2 , 6^3 , 13)

B Answer each of the following:

- 1 Factorize each of the following:

a) $x^2 + x - 42$

b) $ax + 6a - 2x - 12$

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- 2 If $2^x = 16$, and $5^{x+y} = 1$, then find the values of x and y .

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- 3 Simplify to the simplest form:

$$\frac{(\sqrt{3})^5 \times 5^{-2}}{5^{-1} \times (\sqrt{3})^3}$$

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4 Find in \mathbb{R} the solution set of the equation: $x^2 + x = 20$

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5 A bag contains 9 similar cards labeled from 1 to 9. If a card is drawn at random, find:

a) The probability that card carries an odd prime number.

b) The probability that card carries a number divisible by 5.

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6 If $x = \sqrt{27}$, $y = 3$, find in the simplest form the value of:

a) $(\frac{x}{y})^2$

b) $(x + y)^2$

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7 A positive integer, if we add its square to its triple, the result will be 40. What is this integer?

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A Choose the correct answer:

- 1 $5^x = 3$, then $125^x = \dots\dots\dots$. (8 , 27 , 125 , 25)
- 2 If $x^3 + a = (x - 3)(x^2 + 3x + 9)$, then $a = \dots\dots\dots$. (3 , 9 , -27 , 27)
- 3 The volume of a cube of edge length 4 cm equals $\dots\dots\dots$ cm³. (4 , 8 , 16 , 64)
- 4 $1 - \frac{2}{5} = \dots\dots\dots$ % . (20 , 40 , 50 , 60)
- 5 The probability of the certain event is $\dots\dots\dots$. (0 , 1 , 2 , $\frac{1}{2}$)
- 6 If $(3^{x+2} - 3^{x+1}) \div 3^x = \dots\dots\dots$. (0 , 6 , 3 , 9)
- 7 The S.S. of : $x^2 + 36 = 0$ in \mathbb{R} is $\dots\dots\dots$. ($\{0\}$, $\{6\}$, $\{-6\}$, \emptyset)
- 8 quarter of 2^{20} is $\dots\dots\dots$. (2^{10} , 2^{18} , 2^{19} , 2^5)
- 9 In the experiment of throwing a fair die once, the probability of appearing a number not equal 2 is $\dots\dots\dots$. (1 , $\frac{1}{2}$, $\frac{5}{6}$, $\frac{1}{6}$)

B Answer each of the following:

- 1 Find the S.S. of: $2x^2 + 5x - 12 = 0$

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- 2 Factorize each of the following:

a) $x^3 - 27$

b) $x^2 + x - 56$

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- 3 Simplify to the simplest form:

$$\frac{(\sqrt{5})^{x+3} \times 7^{x+2}}{7^{x+1} \times (\sqrt{5})^{x+1}}$$

.....

.....

- 4 A group of cards numbered from 1 to 12. If one card is drawn at random, find the probability that the number on the drawn card is:

a) Odd prime

b) Divisible by 4

- 5 If $x + y = 6$, $x^2 - y^2 = 12$, $x^2 + xy + y^2 = 28$, find the value of: $x^3 - y^3$

- 6 A rectangle with a length more than its width by 7 cm. If its area is 30 cm^2 , find its dimensions.

- 7 If $x = \sqrt{5}$, $y = 4$, find in the simplest form the value of:

a) $\left(\frac{2x}{y}\right)^2$

b) $(x + 2y)^2$

A Choose the correct answer:

- 1 Half of 2^{20} is (2^{20} , 2^{19} , 2^{10} , 2^9)
- 2 If Ahmed's age now is m years, then his age 2 years ago is years.
($m + 2$, $2 - m$, $m - 2$, $2m$)
- 3 $\frac{1}{5} =$ % . (10 , 20 , 40 , 50)
- 4 If $x + y = 2$, then $2x + 2y =$ (2 , 4 , 6 , 8)
- 5 If the expression: $x^2 + kx + 36$ is a perfect square, then $k =$
(± 6 , ± 12 , 36 , -8)
- 6 The multiplicative inverse of the number $(-2)^{-1}$ is (2 , $\frac{1}{2}$, $-\frac{1}{2}$, -2)
- 7 If $x^2 - y^2 = 28$, and $x + y = 4$, then $x - y =$ (4 , 28 , 32 , 7)
- 8 $3^x + 3^x + 3^x = 1$, then $x =$ (3 , 1 , -1 , -3)
- 9 In the experiment of throwing a fair die once, then the probability of appearing an even prime number equals (1 , $\frac{1}{2}$, $\frac{2}{6}$, $\frac{1}{6}$)

B Answer each of the following:

- 1 Factorize each of the following:

a) $x^2 - 4x - 45$

b) $x^3 + 64$

Answer

a) $x^2 - 4x - 45 = (x - 9)(x + 5)$

b) $x^3 + 64 = (x + 4)(x^2 - 4x + 16)$

- 2 Find in
- \mathbb{R}
- the S.S. of the equation:
- $2x^2 - 5x - 7 = 0$

Answer

$$\therefore 2x^2 - 5x - 7 = 0$$

$$\therefore (x + 1)(2x - 7) = 0$$

$$\therefore x = -1 \text{ or } x = \frac{7}{2}$$

$$\therefore \text{The S.S.} = \{-1, \frac{7}{2}\}$$

3 Simplify:

$$\frac{2^{2n+1} \times 3^{2n+1}}{6^{2n}}$$

Answer

$$\begin{aligned}\frac{2^{2n+1} \times 3^{2n+1}}{6^{2n}} &= \frac{2^{2n+1} \times 3^{2n+1}}{2^{2n} \times 3^{2n}} \\ &= 2^{2n+1-2n} \times 3^{2n+1-2n} \\ &= 2 \times 3 = 6\end{aligned}$$

4 If $x = 5$, $y = \sqrt{2}$, find in the simplest form the value of:

a) $x^3 y^2$

b) $(\frac{y}{x})^{-2}$

Answer

$$\begin{aligned}\text{a) } x^3 y^2 &= (5)^3 (\sqrt{2})^2 \\ &= 125 \times 2 = 250\end{aligned}$$

$$\begin{aligned}\text{b) } (\frac{y}{x})^{-2} &= (\frac{\sqrt{2}}{5})^{-2} \\ &= (\frac{2}{25})^{-1} = \frac{25}{2} = 12.5\end{aligned}$$

5 A box contains 6 white balls, 4 red balls and 2 blue balls. If a ball is drawn from the box randomly, find the probability that the drawn ball is:

a) White.

b) Red or blue.

c) Green

Answer

$$\text{a) The probability that the drawn ball is white} = \frac{6}{12} = \frac{1}{2}$$

$$\text{b) The probability that the drawn ball is red or blue} = \frac{6}{12} = \frac{1}{2}$$

$$\text{c) The probability that the drawn ball is green} = \frac{0}{12} = 0$$

- 6 Find the value of x where $x \in \mathbb{Z}$ if: $(\frac{7}{3})^{x-2} = 2\frac{1}{3}$

Answer

$$\therefore (\frac{7}{3})^{x-2} = 2\frac{1}{3}$$

$$\therefore (\frac{7}{3})^{x-2} = \frac{7}{3}$$

$$\therefore (\frac{7}{3})^{x-2} = (\frac{7}{3})^1$$

$$\therefore x - 2 = 1$$

$$\therefore x = 3$$

- 7 A real number if you add it to its square, the result is 12, find that number.

Answer

Let the number be x

$$\therefore x + x^2 = 12$$

$$\therefore x^2 + x - 12 = 0$$

$$\therefore x^2 + x - 12 = (x + 4)(x - 3)$$

$$\therefore x = -4$$

or

$$x = 3$$

Then the number is -4 or 3

A Choose the correct answer:

- 1 If the expression : $4x^2 + kx + 9$ is a perfect square, then $k =$
(12 , **± 12** , 6 , ± 6)
- 2 $\frac{3}{8} =$ % (375 , **37.5** , 3.75 , 735)
- 3 The probability of the impossible event is (0 , 1 , 2 , $\frac{1}{2}$)
- 4 Third of $3^{10} =$ (3^{20} , 3^{19} , 3^{10} , **3^9**)
- 5 If $2^x = 3$, then $(16)^x =$ (18 , 16 , **81** , 6)
- 6 If $(x - 5)$ is a factor of the expression: $x^2 - 11x + 30$, then the other factor is
($x - 3$, $x - 5$, $x - 10$, **$x - 6$**)
- 7 When throwing a fair die once and observing the upper face, the probability of appearing an even number is (0 , 1 , **$\frac{1}{2}$** , $\frac{1}{6}$)
- 8 $(\sqrt{2} + 1)^9 (\sqrt{2} - 1)^9 =$ (-1 , **1** , 2 , -2)
- 9 $3^2 \times 2^2 =$ (6^4 , **6^2** , 6^3 , 13)

B Answer each of the following:

- 1 Factorize each of the following:

a) $x^2 + x - 42$

b) $ax + 6a - 2x - 12$

Answer

a) $x^2 + x - 42 = (x - 6)(x + 7)$

b) $ax + 6a - 2x - 12 = (ax + 6a) - (2x + 12)$

$$= a(x + 6) - 2(x + 6)$$

$$= (x + 6)(a - 2)$$

- 2 If
- $2^x = 16$
- , and
- $5^{x+y} = 1$
- , then find the values of
- x
- and
- y
- .

Answer

$$\therefore 2^x = 16$$

$$\therefore 2^x = 2^4$$

$$\therefore x = 4$$

$$\therefore 5^{x+y} = 1$$

$$\therefore 5^{x+y} = 5^0$$

$$\therefore x + y = 0$$

$$\therefore x = 4$$

$$\therefore 4 + y = 0$$

$$\therefore y = -4$$

- 3 Simplify to the simplest form:

$$\frac{(\sqrt{3})^5 \times 5^{-2}}{5^{-1} \times (\sqrt{3})^3}$$

Answer

$$\begin{aligned}\frac{(\sqrt{3})^5 \times 5^{-2}}{5^{-1} \times (\sqrt{3})^3} &= (\sqrt{3})^{5-3} \times 5^{-2+1} \\ &= (\sqrt{3})^2 \times 5^{-1} \\ &= 3 \times \frac{1}{5} = \frac{3}{5}\end{aligned}$$

- 4 Find in \mathbb{R} the solution set of the equation: $x^2 + x = 20$

Answer

$$\therefore x^2 + x - 20 = 0$$

$$\therefore (x + 5)(x - 4) = 0$$

$$\therefore x = -5 \quad \text{or} \quad x = 4$$

$$\therefore \text{The S.S.} = \{-5, 4\}$$

- 5 A bag contains 9 similar cards labeled from 1 to 9. If a card is drawn at random, find:
- The probability that card carries an odd prime number.
 - The probability that card carries a number divisible by 5.

Answer

$$\text{a) The probability that card carries an odd prime number is } \frac{3}{9} = \frac{1}{3}$$

$$\text{b) The probability that card carries a number divisible by 5 is } \frac{1}{9}$$

- 6 If $x = \sqrt{27}$, $y = 3$, find in the simplest form the value of:

$$\text{a) } \left(\frac{x}{y}\right)^2$$

$$\text{b) } (x + y)^2$$

Answer

$$\begin{aligned}\text{a) } \left(\frac{x}{y}\right)^2 &= \left(\frac{\sqrt{27}}{3}\right)^2 \\ &= \frac{27}{9} = 3\end{aligned}$$

$$\begin{aligned}\text{b) } (x + y)^2 &= (\sqrt{27} + 3)^2 \\ &= 27 + 9 + 6\sqrt{27} \\ &= 36 + 6\sqrt{27}\end{aligned}$$

- 7 A positive integer, if we add its square to its triple, the result will be 40. What is this integer?

Answer

Let the integer be x

$$\therefore x^2 + 3x = 40$$

$$\therefore x^2 + 3x - 40 = 0$$

$$\therefore x^2 + 3x - 40 = (x - 5)(x + 8)$$

$$\therefore x = 5, x = -8 \text{ (refused)}$$

$$\therefore \text{The integer is } 5$$

A Choose the correct answer:

- 1 $5^x = 3$, then $125^x = \dots\dots\dots$. (8 , **27** , 125 , 25)
- 2 If $x^3 + a = (x - 3)(x^2 + 3x + 9)$, then $a = \dots\dots\dots$. (3 , 9 , **-27** , 27)
- 3 The volume of a cube of edge length 4 cm equals $\dots\dots\dots$ cm³. (4 , 8 , 16 , **64**)
- 4 $1 - \frac{2}{5} = \dots\dots\dots$ % . (20 , 40 , 50 , **60**)
- 5 The probability of the certain event is $\dots\dots\dots$. (0 , **1** , 2 , $\frac{1}{2}$)
- 6 If $(3^{x+2} - 3^{x+1}) \div 3^x = \dots\dots\dots$. (0 , **6** , 3 , 9)
- 7 The S.S. of : $x^2 + 36 = 0$ in \mathbb{R} is $\dots\dots\dots$. ($\{0\}$, $\{6\}$, $\{-6\}$, **\emptyset**)
- 8 quarter of 2^{20} is $\dots\dots\dots$. (2^{10} , **2^{18}** , 2^{19} , 2^5)
- 9 In the experiment of throwing a fair die once, the probability of appearing a number not equal 2 is $\dots\dots\dots$. (1 , $\frac{1}{2}$, **$\frac{5}{6}$** , $\frac{1}{6}$)

B Answer each of the following:

- 1 Find the S.S. of: $2x^2 + 5x - 12 = 0$

Answer

$$\therefore 2x^2 + 5x - 12 = 0$$

$$\therefore 2x^2 + 5x - 12 = (x + 4)(2x - 3)$$

$$\therefore x = -4 \quad \text{or} \quad x = \frac{3}{2}$$

$$\therefore \text{The S.S.} = \{-4, \frac{3}{2}\}$$

- 2 Factorize each of the following:

a) $x^3 - 27$

b) $x^2 + x - 56$

Answer

a) $x^3 - 27 = (x - 3)(x^2 + 3x + 9)$

b) $x^2 + x - 56 = (x + 8)(x - 7)$

- 3 Simplify to the simplest form: $\frac{(\sqrt{5})^{x+3} \times 7^{x+2}}{7^{x+1} \times (\sqrt{5})^{x+1}}$

Answer

$$\begin{aligned}\frac{(\sqrt{5})^{x+3} \times 7^{x+2}}{7^{x+1} \times (\sqrt{5})^{x+1}} &= (\sqrt{5})^{x+3-x-1} \times 7^{x+2-x-1} \\ &= (\sqrt{5})^2 \times 7 \\ &= 5 \times 7 = 35\end{aligned}$$

- 4 A group of cards numbered from 1 to 12. If one card is drawn at random, find the probability that the number on the drawn card is:

- a) Odd prime b) Divisible by 4

Answer

a) The probability that the number on the drawn card is odd prime is $\frac{4}{12} = \frac{1}{3}$

b) The probability that the number on the drawn card is divisible by 4 is $\frac{3}{12} = \frac{1}{4}$

- 5 If $x + y = 6$, $x^2 - y^2 = 12$, $x^2 + xy + y^2 = 28$, find the value of: $x^3 - y^3$

Answer

$$\because x^2 - y^2 = 12$$

$$\therefore x^2 - y^2 = (x + y)(x - y)$$

$$\therefore 12 = 6(x - y)$$

$$\therefore (x - y) = 2$$

$$\because x^3 - y^3 = (x - y)(x^2 + xy + y^2)$$

$$\therefore x^3 - y^3 = 2 \times 28$$

$$\therefore x^3 - y^3 = 56$$

- 6 A rectangle with a length more than its width by 7 cm. If its area is 30 cm^2 , find its dimensions.

Answer

Let the width be x .

\therefore The length is $x + 7$

\therefore The area of the rectangle = Length \times Width

$$\therefore 30 = x(x + 7)$$

$$\therefore 30 = x^2 + 7x$$

$$\therefore x^2 + 7x - 30 = 0$$

$$\therefore (x + 10)(x - 3) = 0$$

$$\therefore x = -10 \text{ (refused)}, x = 3$$

$$\therefore \text{The width} = 3 \text{ cm}$$

$$\therefore \text{The length} = 3 + 7 = 10 \text{ cm}$$

- 7 If $x = \sqrt{5}$, $y = 4$, find in the simplest form the value of:

a) $\left(\frac{2x}{y}\right)^2$

b) $(x + 2y)^2$

Answer

$$\text{a) } \left(\frac{2x}{y}\right)^2 = \left(\frac{2\sqrt{5}}{4}\right)^2$$

$$= \frac{20}{16} = \frac{5}{4}$$

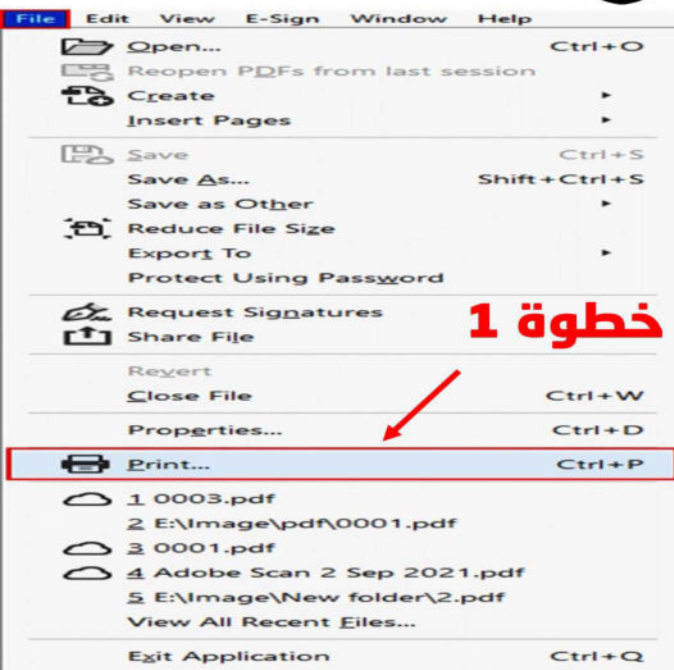
$$\text{b) } (x + 2y)^2 = (\sqrt{5} + 8)^2$$

$$= 5 + 64 + 16\sqrt{5}$$

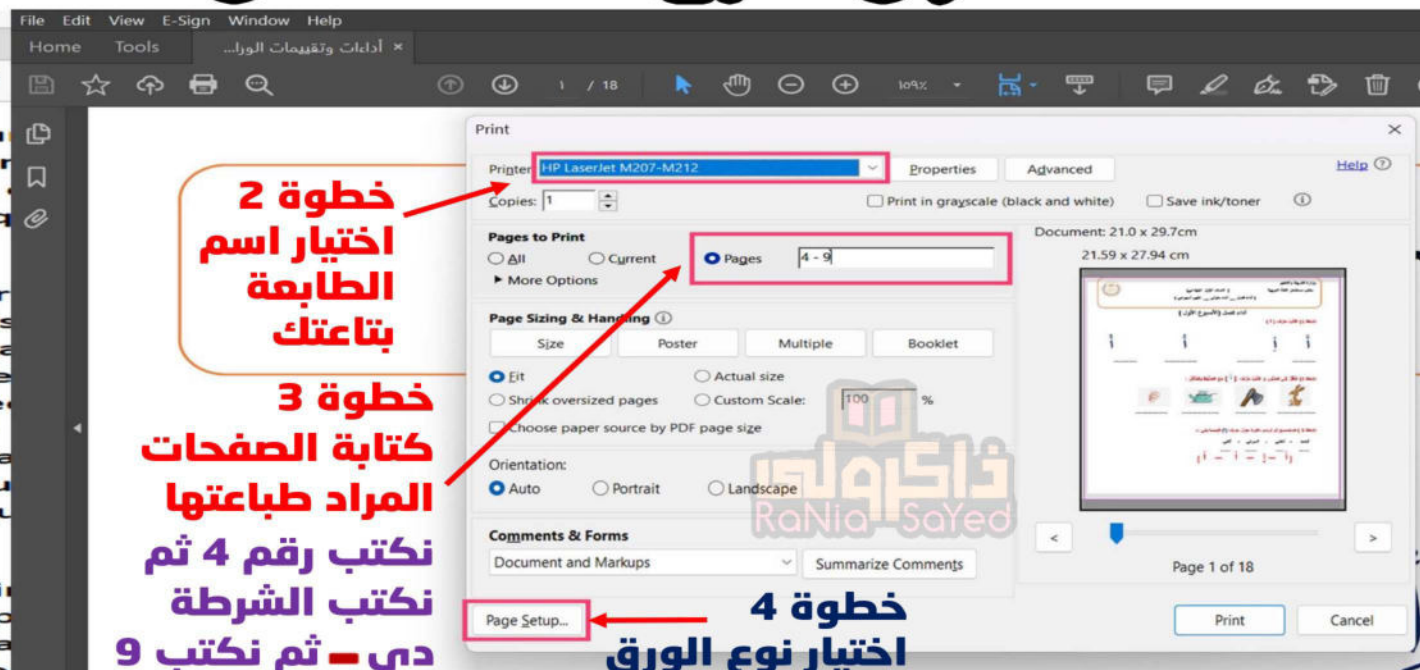
$$= 69 + 16\sqrt{5}$$

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9



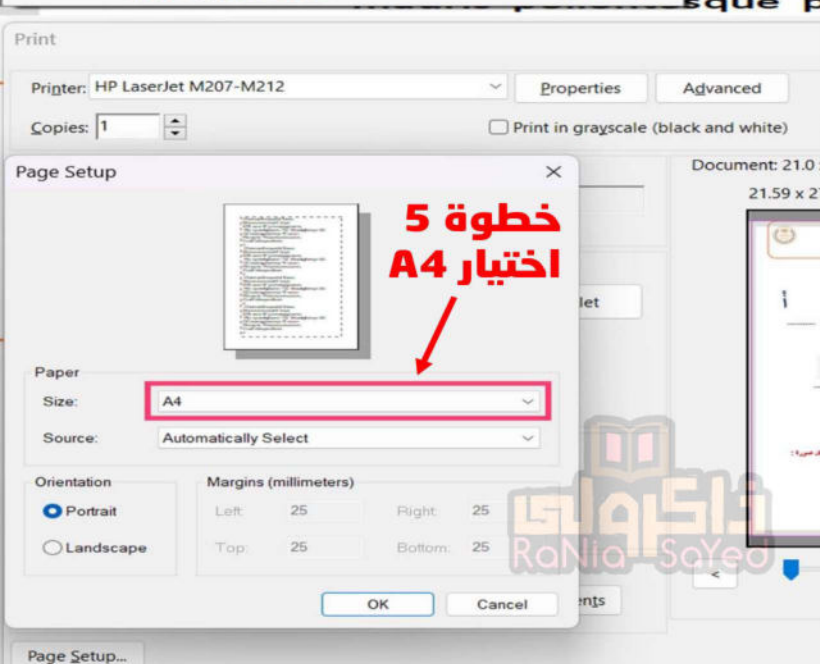
خطوة 1



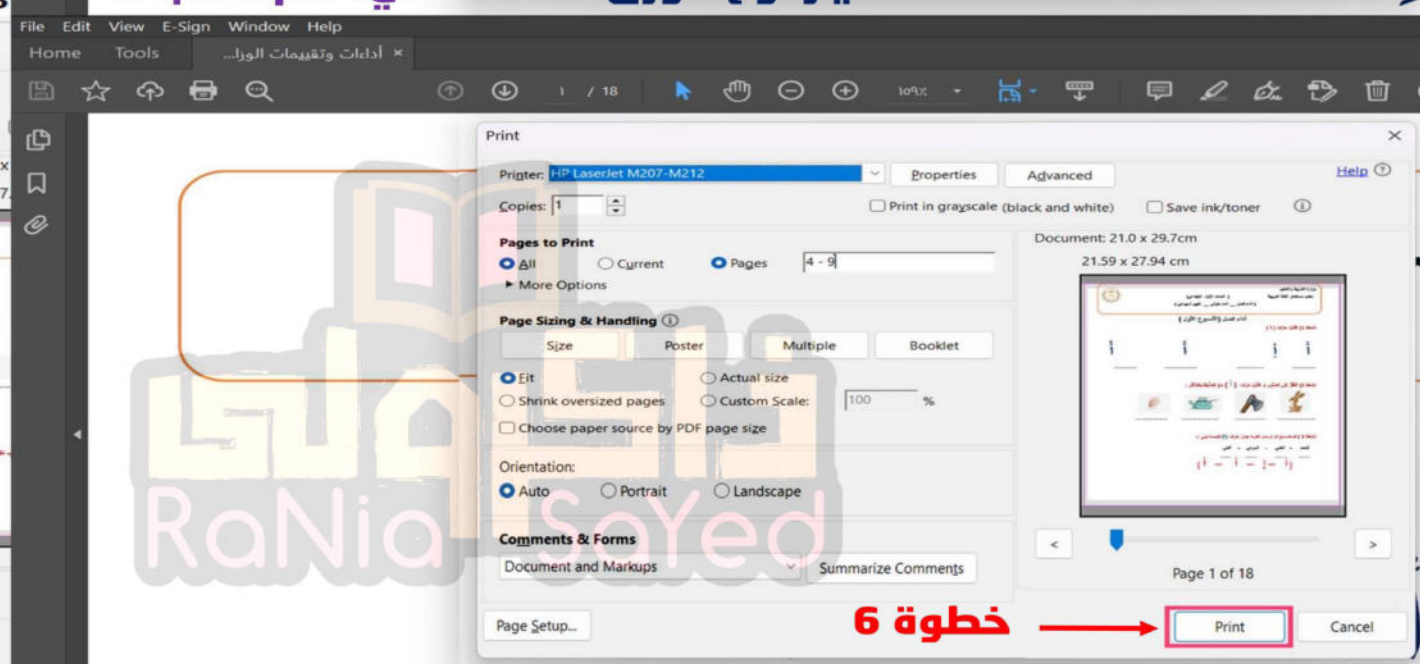
خطوة 2
اختيار اسم
الطابعة
بتاعتك

خطوة 3
كتابة الصفحات
المراد طباعتها
نكتب رقم 4 ثم
نكتب الشرطة
دي - ثم نكتب 9

خطوة 4
اختيار نوع الورق



خطوة 5
اختيار A4



خطوة 6

حمل الآن

مجانا وحصريا

امتحانات رقم (2)

الترم الثاني



First Algebra

Model

1

1 Choose the correct answer from those given:

1. If $(x - 1)$ is one factor of the expression: $x^2 - 4x + 3$, then the other factor is

- a** $x-3$ **b** $x+1$ **c** $x - 4$ **d** $x + 3$

2. If the expression: $x^2 - cx + 12$ can be factorized, when $c =$

- a** -1 **b** 4 **c** 7 **d** 1

3. If the expression: $x^2 + 18x + m$ is perfect square trinomial, when $m =$

- a** 9 **b** 18 **c** 81 **d** 324

4. If $x^2 - 2xy + y^2 = 25$, then $(x - y) =$

- a** 25 **b** 5 **c** -5 **d** ± 5

5. The solution set of the equation: $x^2 - 3x = 0$ in R is

- a** $\{3\}$ **b** $\{0,3\}$ **c** $\{0, -3\}$ **d** $\{0\}$

6. If $4^6 \times 4^x = 1$, then $x =$

- a** -6 **b** 2 **c** 3 **d** 6

7. $5^2 + 5^2 + 5^2 + 5^2 + 5^2 =$

- a** 5^3 **b** 5^{10} **c** 5^{16} **d** 5^{32}

8. If $3^{x-2} = 1$, then $x =$

- a** 2 **b** 4 **c** -4 **d** -2

9. A regular die is thrown once and observed the upper face, then the probability of appearance a number divisible by 3 is

- a** $\frac{1}{3}$ **b** $\frac{1}{2}$ **c** $\frac{1}{4}$ **d** $\frac{3}{4}$

2 Answer the following questions:

1. Factorize each of the following:

- a** $x^2 - 4 =$ **b** $2x^2 + 3x + 1 =$

2. Factorize each of the following:

a $x^3 + 8 =$

b $ax + bx + ay + by =$
 $=$

3. Use factorization to find the value of: $(7.8)^2 + 2 \times 7.8 \times 2.2 + (2.2)^2$.

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4. If $2^x = 3$ and $5^y = 4$, find the value of: $8^x - 25^y$.

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5. Find the positive real number which if added to its square the result
 $= 30$

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6. If: $\frac{(10)^n \times (10)^{-7}}{(0.1)^2 \times 0.001} = 100$, then, find the value of n.

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7. A bag contains a number of similar balls "white and red", 5 balls are white and the rest of them are red. if the probability of drawing a red ball is $\frac{2}{3}$. Find the number of all the balls.

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Model

2

1 Choose the correct answer from those given:

1. If $x^3 - y^3 = 35$, and $x^2 + xy + y^2 = 7$, then $x - y =$

- a** 28 **b** 21 **c** 15 **d** 5

2) If: $9x^2 - kx + 4$ is perfect square then $k =$

- a** 12 **b** 7 **c** - 6 **d** - 2

3. If: $3^{x-1} = 3$, then $x =$

- a** 0 **b** 1 **c** 2 **d** -1

4. $(-\sqrt{5})^{-9} \times (-\sqrt{5})^5 =$

- a** 5^{-1} **b** 5^{-2} **c** 5^{-4} **d** 5^{-8}

5. If: $3^x = 5$, $3^y = 7$, then $3^{x-y} =$

- a** $\frac{5}{7}$ **b** $\frac{7}{5}$ **c** 2 **d** 35

6. If $x^2 - 2x - k = (x + 3)(x - 5)$, then $k =$

- a** -15 **b** -8 **c** 2 **d** 15

7. $(64)^2 - (36)^2 =$

- a** 100 **b** 28 **c** 280 **d** 2800

8. If $x = 4$ is one solution of the equation: $x^2 + x - 20 = 0$, then the other solution is

- a** 20 **b** 5 **c** -5 **d** -4

9. A bag contains a number of similar balls, some of them are red, 2 greens, and 4 blues. If the probability of drawing a green ball is $\frac{1}{6}$, then the number of the red balls=

- a** 8 **b** 6 **c** 4 **d** 2

2 Answer the following questions:

1. Factorize each of the following:

a $x^2 + x - 12 =$

b $4x^2 - 9 =$

2. Factorize each of the following:

a $x^3 - 64 =$

b $xy + 5y + 7x + 35 =$
 $=$

3. By using factorization, find the value of: $38 \times 66 + 38 \times 34$.

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4. Find in R the S.S. of the equation: $x(x - 2) - 24 = 0$.

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5. If: $\frac{(-a)^6 \times (a)^{-3} \times a^2}{(a)^{-2} \times (-a)^8} = \frac{5}{6}$, then, find the value of a.

.....

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6. If: $a = -2$ and $b = 2$ and $c = \sqrt{3}$, then find the value of $a^b \div c^a$.

.....

.....

7. The set $\{2, 3, 4\}$ is used for writing a number which consists of two different digits. Calculate the probability of each of the following events:

a The unit digit is even .

b The sum of the two digits is greater than 5.

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Model

3

1 Choose the correct answer from those given:

1. If: $a + b = 5$ and $x + y = 9$, then $ax + bx + ay + by =$

a 14

b 1.8

c 45

d 90

2. If the expression: $x^2 - 2x + c$ can be factorized, when $c =$

a -1

b -3

c 15

d 8

3. The rectangle whose area is $(x^2 - 7x + 6)$ square unit and its length is $(x - 6)$ length unit, then its width is length unit.

a $x - 6$

b $x + 1$

c $x - 1$

d $x + 6$

4. $x^3 + 27 = (x + 3)(\dots\dots\dots)$

a $x^2 - 6xy + 9$

b $x^2 - 3xy + 9$

c $x^2 - 9$

d $x^2 + 6xy + 9$

5. If $2^{x-1} = 1$, then $x =$

a 0

b 1

c 2

d -1

6. If $6^x = 7$, then $6^{x+1} =$

a 8

b 13

c 36

d 42

7. The solutions in R for the equation $3x^2 - 75 = 0$ is

a ± 25

b ± 6

c ± 10

d ± 5

8. $(\sqrt{5})^{-6} \div (\sqrt{5})^{-4} =$

a 25

b 5

c $\frac{1}{5}$

d $\frac{1}{25}$

9. The probability of the occurrence of an event $= \frac{5}{7}$, then the probability of the non-occurrence of this event =

a $\frac{5}{7}$

b 1

c $\frac{2}{7}$

d $\frac{1}{4}$

2 Answer the following questions:

1. Factorize each of the following:

a $4x^2 - 9 =$

b $2x^2 + 3x - 5 =$

2. Factorize each of the following:

a $x^4 + x^2y^2 + 25x^4 =$

b $xy + 5y + 7x + 35 = \dots\dots\dots$
 $= \dots\dots\dots$

3. If $5^{x-1} = \frac{1}{25}$, then, find the value of x^{-3} .

.....

.....

4. Find in R the S.S. of the equation: $x^2 - 8x + 16 = 0$.

.....

.....

5. Write the expression: $\frac{(-a)^6 \times (a)^{-3} \times a^2}{(a)^{-2} \times (-a)^8}$ "In the simplest form."

.....

.....

6. If: $a = -2$ and $b = 2$ and $c = \sqrt{2}$, then, find the value of $a^b \times c^a$.

.....

.....

7. A numbered card is selected randomly from a set of similar cards numbered from 1 to 30. Find the probability of getting a card carries:

1. A multiple of 6.
 2. A number is divisible by 25.
 3. A positive integer less than or equal 30.
-
-
-

Model

4

1 Choose the correct answer from those given:

1. If $(2x + 3)$ is one factor of the expression: $2x^2 - 5x - 12$, then the other factor is

- a** $x - 3$ **b** $x + 4$ **c** $x - 4$ **d** $x - 8$

2. If the expression: $x^2 + c = (x - 5)(x + 5)$, then $c =$

- a** -25 **b** 25 **c** ± 25 **d** -10

3. If: $x^3 - y^3 = 26$, $(x - y) = 2$, then $(x^2 + xy + y^2) =$

- a** 52 **b** 24 **c** 13 **d** 11

4. If: $x^2 + kx + 100$ is a perfect square, then $k =$

- a** ± 10 **b** ± 20 **c** ± 25 **d** ± 40

5. If: $5^{x-1} = \frac{1}{5}$, then $x =$

- a** 0 **b** 1 **c** 2 **d** -1

6. If: $2^x = 3$ and $2^y = 5$, then $2^{x+y} =$

- a** 2^8 **b** 8^2 **c** 15 **d** 30

7. $\left(\frac{2\sqrt{5}}{5\sqrt{2}}\right)^{-2} =$

- a** 10 **b** $\frac{5}{2}$ **c** $\frac{2}{5}$ **d** $\frac{1}{10}$

8. The solutions in \mathbb{R} the equation $5x^2 - 20 = 0$ is

- a** ± 5 **b** $\pm 2\sqrt{2}$ **c** ± 4 **d** ± 2

9. A bag contains 10 cards numbered from 1 to 10, if we choose one card at random, then the probability of getting a card number 11 =

- a** 1 **b** $\frac{1}{2}$ **c** $\frac{1}{10}$ **d** zero

2 Answer the following questions:

1. Factorize each of the following:

a $x^2 - 13x + 36 =$

b $3x^2 + 13x - 10 =$

2. Factorize each of the following:

a $2x^2 - 50 = \dots\dots\dots$.

b $5n - 10m - an + 2am = \dots\dots\dots$
 $= \dots\dots\dots$.

3. If: $\frac{(2)^x \times (2)^2}{(2)^5} = 8$, find the value of x.

.....

.....

4. If: $a = -1$ and $b = -3$, then, find the value of $a^b \times b^a$.

.....

.....

5. If: $(x - y)^2 = 25$, $x + y = 7$, then, find the value of $x^2 - y^2$.

.....

.....

6. Find the solution set for the following equations in \mathbb{R} :

e) $x^2 - 7x = 30$.

.....

.....

7. Drawing randomly a colored marble out a bag containing 32 similar marble colored "red, white, green and yellow", if the probability of getting a red marble is $\frac{3}{8}$. Estimate how many red marbles are in the bag?

.....

.....

Model

5

1 Choose the correct answer from those given:

1. If: $x^2 + y^2 = 25$, $xy = 12$, then find the value of $x + y$.

a ± 1

b ± 5

c ± 7

d ± 8

2. If the expression: $x^3 + c = (x - 5)(x^2 + 5x + 25)$, then $c =$

a -25

b 125

c 25

d -125

3. If the expression: $x^2 + 11x + m$ can be factorized, when $m =$

a -10

b 11

c -18

d 28

4. If $x^2 + kx + 64$ is a perfect square, then $k =$

a ± 8

b ± 16

c ± 32

d ± 4

5. If $7^{x-1} = 49$, then $x =$

a 0

b 1

c 2

d 3

6. $\left(\frac{2\sqrt{5}}{5\sqrt{2}}\right)^4 =$

a 100

b $\frac{25}{4}$

c $\frac{4}{25}$

d $\frac{1}{100}$

7. $(-x)^7 \times (-x)^{-2} \div x^5 =$

a 1

b -1

c x^{-12}

d $-x^4$

8. The rectangle whose area is $(2x^2 - 3x - 5) \text{ cm}^2$ and one of its dimensions is $(x+1) \text{ cm}$, then the second dimension is cm.

a $x - 5$

b $2x - 5$

c $2x + 5$

d $2x - 3$

9. For every event A , then $P(A) \in$

a $] -1, 1[$

b $] 0, 1[$

c $[-1, 1]$

d $[0, 1]$

2 Answer the following questions:

1. Factorize each of the following:

a $3x^2 - 48 =$

b $2x^2 + 3x - 20 =$

2. Factorize each of the following:

a $x^4 + 4 =$

b $3ax - a - 6bx + 2b =$

3. Find in R the S.S. of the equation: $6x^2 - 7x = 3$.

4. $\left(\frac{3}{5}\right)^{x+2} = \frac{125}{27}$. Then, find the value of x.

5. Write the Expression: $\frac{(-y)^4 \times (y)^{-3} \times y^2}{(y)^{-2} \times (-y)^4}$ "In the simplest form."

6. If: $a = -2$ and $b = 3$. Then, find the value of $a^b \div b^a$.

7. If a fair die is thrown once and we observe the number on the upper face. Then, find the probability of each of the following events:

a A is the event of appearance of a number greater than 4.

b B is the event of appearance of an even number.

c C is the event of appearance of the number 5.

Model Answers Algebra

Model 1

1. **a** 2. **c** 3. **c** 4. **d** 5. **b**

6. **a** 7. **a** 8. **a** 9. **a**

2. 1. **a** $(x-2)(x+2)$

b $(2x+1)(x+1)$

2. **a** $(x+2)(x^2-2x+4)$

b $a(x+y) + b(x+y) = (x+y)(a+b)$

3. $= (7.8 + 2.2)^2 = 10^2 = 100$

4. $8^x - 25^y = (2^x)^3 - (5^y)^2$

$$3^3 - 4^2 = 11$$

5. $x^2 + x = 30$ $x^2 + x - 30 = 0$

$$\therefore (x+6)(x-5) = 0$$

$$x = -6 \text{ (refused)} \quad x = 5$$

The number is 5

6. $\frac{(10)^n \times (10)^{-7}}{(10)^{-2} \times (10)^{-3}} = 10^{n-2} = 100$

$$\therefore 10^{n-2} = 10^2 \quad n = 4$$

7. Probability of white = $\frac{1}{3} = \frac{5}{n}$

$$\text{Number of all balls} = 3 \times 5 = 15$$

Model 2

1. **d** 2. **a** 3. **c** 4. **b** 5. **a**

6. **d** 7. **d** 8. **c** 9. **b**

2. 1. **a** $(x+4)(x-3)$

b $(2x-1)(2x+3)$

2. **a** $(x-4)(x^2+4x+16)$

b $y(x+5) + 7(x+5) = (x+5)(y+7)$

3. $= 38 \times (66 + 34) = 38 \times 100 = 3800$

4. $x^2 - 2x - 24 = 0$ $(x-6)(x+4) = 0$

$$\therefore x = 6 \text{ or } x = -4 \quad \text{S.S} = \{6, -4\}$$

$$5. \frac{a^5}{a^6} = \frac{5}{6}$$

$$\therefore a^{-1} = \frac{5}{6} \quad \therefore a^{-1} = \frac{6}{5}$$

$$6. (-2)^2 \div (\sqrt{3})^{-2} = 4 \times 3 = 12$$

7. $S = \{23, 24, 32, 34, 42, 43\}$

$$A = \{24, 32, 34, 42\} \quad \therefore P(A) = \frac{4}{6} = \frac{2}{3}$$

$$B = \{24, 34, 42, 43\} \quad \therefore P(B) = \frac{4}{6} = \frac{2}{3}$$

Model 3

1. **c** 2. **b** 3. **c** 4. **b** 5. **b**

6. **d** 7. **d** 8. **c** 9. **c**

2. 1. **a** $(2x-3)(2x+3)$

b $(2x+5)(x-1)$

2. **a** $(x^4 + 10x^2y^2 + 25y^4) - 10x^2y^2 + x^2y^2$

$$= (x^2 + 5y^2)^2 - 9x^2y^2$$

$$= (x^2 + 5y^2 - 3xy)(x^2 + 5y^2 + 3xy)$$

b $y(x+5) + 7(x+5)$

$$= (x+5)(y+7)$$

3. $x-1 = -2$ $x = -1$

$$\therefore x^{-3} = (-1)^{-3} = -1$$

4. $(x-4)^2 = 0$

$$x = 4 \quad \text{S.S} = \{4\}$$

$$5. = \frac{a^5}{a^6} = a^{-1} = \frac{1}{a}$$

$$6. (-2)^2 \times (\sqrt{2})^{-2} = 4 \times \frac{1}{2} = 2$$

$$7. A = \{6, 12, 18, 24, 30\} \quad \therefore P(A) = \frac{5}{30} = \frac{1}{6}$$

$$B = \{25\} \quad \therefore P(B) = \frac{1}{30}$$

$$C = S \quad \therefore P(S) = 1$$

Model

4

1. **d** 2. **a** 3. **c** 4. **b** 5. **a**

6. **c** 7. **b** 8. **d** 9. **d**

2. 1. **a** $(x - 9)(x - 4)$

b $(3x - 2)(x + 5)$

2. **a** $2(x^2 - 25) = 2(x - 5)(x + 5)$

b $5(n - 2m) - a(n - 2m) = (n - 2m)(5 - a)$

3. $2^{x-3} = 2^3$ $x - 3 = 3$

$\therefore x = 6$

4. $(-1)^{-3} \times (-3)^{-1} = -1 \times \frac{-1}{3} = \frac{1}{3}$

5. $x - y = \pm 5$ $x + y = 7$

$x^2 - y^2 = \pm 5 \times 7 = \pm 35$

6. $x^2 - 7x - 30 = 0$

$(x - 10)(x + 3) = 0$

$x = 10$ or $x = -3$ $S.S = \{10, -3\}$

7. The number of red marble = $\frac{3}{8} \times 32$
= 12 marble.

Model

5

1. **c** 2. **d** 3. **d** 4. **b** 5. **d**

6. **c** 7. **b** 8. **b** 9. **d**

2. 1. **a** $3(x^2 - 16) = 3(x - 4)(x + 4)$

b $(2x - 5)(x + 4)$

2. **a** $(x^4 + 4x^2 + 4) = (x^2 + 2)^2 - 4x^2$

$= (x^2 + 2 + 2x)(x^2 + 2 - 2x)$

b $a(3x - 1) - 2b(3x - 1)$

$= (3x - 1)(a - 2b)$

3. $6x^2 - 7x - 3 = 0$

$(3x + 1)(2x - 3) = 0$

$x = \frac{-1}{3}$ or $x = \frac{3}{2}$

$S.S = \{\frac{-1}{3}, \frac{3}{2}\}$

4. $(\frac{3}{5})^{x+2} = (\frac{3}{5})^{-3}x + 2 = -3$

$\therefore x = 5$

5. $= \frac{y^3}{y^2} = y$

6. $(-2)^3 \div (3)^{-2} = -8 \times 9 = -72$

7. $P(A) = \frac{2}{6} = \frac{1}{3}$

$P(B) = \frac{3}{6} = \frac{1}{2}$

$P(C) = \frac{1}{6}$

حمل الآن

مجانا وحصريا

امتحانات رقم (3)

الترم الثاني



ALGEBRA – MODEL No 1**[Q1] Choose the correct answer:****(1)** If $x^2 + 10x + k$ is perfect square , then $k = \dots\dots\dots$

- a) 100 b) 25 c) 20 d) 10

(2) The solution set of : $3x^2 = 3x$ in R is $\dots\dots\dots$

- a)
- $\{3, -1\}$
- b)
- $\{-3, 1\}$
- c)
- $\{0, 1\}$
- d)
- $\{1, 3\}$

(3) If $3^x = 5$, $3^y = 7$, then $3^{x+y} = \dots\dots\dots$

- a) 12 b) 15 c) 21 d) 35

(4) If : $x^2 + ax - 12$ can be factorize , then $a = \dots\dots\dots$

- a) 7 b) 8 c) 4 d) 13

(5) Which of the following is true ($x \in R$)

- a)
- $9^x > 0$
- b)
- $x + 9 > 0$
- c)
- $x^9 > 0$
- d)
- $9x > 0$

(6) If the age of a man now is x year , then his age after 5 years is

- a)
- $X + 5$
- b)
- $X - 5$
- c)
- $5x$
- d)
- x

[Q2] Complete each of the following:1) If : $k^2 + m^2 = 21$, $km = 3$, then $k + m = \dots\dots\dots$ 2) If $(x + 1)$ is factor of $5x^2 - 2x - 7$, then the other factor is $\dots\dots\dots$ 3) If Sixth of the number $(2^{12} \times 3^{12}) = 6^k$, then $k = \dots\dots\dots$ 4) The S.S : $x^3 + 25x = 0$ in R is $\dots\dots\dots$ 5) If $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots$

[Q3] factorize completely each of the following :

A) ① $x^6 - 7x^3 - 8$ ② $16x^2 - a^2 + 6ax - 9x^2$

B) Use factorization to get the value of each of the following easily:

① $(14.06)^2 - 8.12 \times 14.06 + (4.06)^2$ ② $(998)^2 - 4$

[Q4]

A) Find real number that its twice exceed to its multiplicative inverse by 1 ?

B) find the value of x in each of the following :

① $3^{x-1} = 27$ ② $3^{x-3} = 2^{2x-6}$

[Q5] A) If $\frac{8^x \times 3^{2x}}{18^x} = 64$, then find the value of 4^{-x}

B) A box contains 40 cards numbered from 1 to 40 . a card is drawn randomly. Calculate the probability of drawing card carrying :

- ① An even number
 - ② A number divisible by 5
 - ③ A number is perfect square
 - ④ A prim number less than 18
-

End of the questions

ALGEBRA – MODEL No 2**[Q1] Choose the correct answer:**(1) If : $x^2 - kx + 25$ is perfect square then $k = \dots\dots\dots$

- a) 5 b) 25 c) ± 10 d) ± 5

(2) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

- a) 4^4 b) $(16)^3$ c) 4^{12} d) 4^{81}

(3) If $x = \frac{\sqrt{9}}{\sqrt{3}}$, then $x^{-1} = \dots\dots\dots$

- a) $\sqrt{3}$ b) 2 c) $\frac{\sqrt{3}}{\sqrt{2}}$ d) $\frac{\sqrt{3}}{3}$

(4) If : $k - m = 9$, $k + m = 15$ then $k^2 - m^2 = \dots\dots\dots$

- a) 135 b) 9 c) 150 d) $\frac{3}{5}$

(5) $2^0 + 2^{-1} - \left(\frac{-1}{\sqrt{2}}\right)^2 = \dots\dots\dots$

- a) 2 b) 0 c) 1 d) -1

(6) Quarter of $(\sqrt{2})^{12} = \dots\dots\dots$

- a) $(\sqrt{2})^3$ b) 2^3 c) 2^4 d) 12

[Q2] Complete each of the following:

1) $x^2(x+1)(x-1) = (\dots\dots\dots - \dots\dots\dots)(x+1)$

2) $x^2 - 5x + 6 = (\dots\dots\dots - 3)(x - \dots\dots\dots)$

3) The probability of an impossible event = $\dots\dots\dots$

4) $x^3 + 8 = (\dots\dots + 2)(x^2 \dots\dots + 4)$

5) $\sqrt{2} \times (\sqrt{2})^2 \times (\sqrt{2})^3 = \dots\dots\dots$ in the simplest form

[Q3]

- A)** In a football league, the probability of a team to win is 0.6 and the probability of a draw is 0.3. If the number of matches supposed to be played by that team is 30 matches.
How many matches do you predict the team loses?
- _____

- B)** The solution set of : $2x^2 - 5x = 3$ in \mathbb{R} is
- _____

[Q4]

- A)** Find in the simplest form : $\frac{2^{2n+1} \times 5^{2n+1}}{10^{2n}}$
- _____

- B)** If : $(9)^{x+3} = 3^{x+5}$, then find the value of x ?
- _____

[Q5] Factorize completely each of the following:

① $5x^2 - 3x - 2$

③ $a^2 - b^2c^4$

② $64x^4 + n^4$

④ $x^2 - 2xy + y^2 - z^2$



End of the questions

ALGEBRA – MODEL No 3**[Q1] Choose the correct answer:**

(1) If : $a^2 - b^2 = 16$, $b - a = 2$, then $a + b = \dots\dots\dots$

- a) 4 b) -8 c) 8 d) 2

(2) If : $\sqrt{x+5} = 3$ then $\sqrt{x} = \dots\dots\dots$

- a) 0 b) 2 c) 4 d) 9

(3) The S S of : $x^2 + 4 = 0$ in R is $\dots\dots\dots$

- a) $\{-4\}$ b) $\{-2, 2\}$ c) $\{-4, 4\}$ d) ϕ

(4) Sixth of the number $(2^{12} \times 3^{12}) = \dots\dots\dots$

- a) 6^2 b) 6^{11} c) 6^4 d) 6^{23}

(5) If : $4x^2 + 12x + a$ is perfect square then $a = \dots\dots\dots$

- a) 6 b) 16 c) 1 d) 9

(6) If : $4^5 = 5$, then $4^{x-1} = \dots\dots\dots$

- a) 1.25 b) 0.125 c) 0.8 d) 0.08

[Q2] Complete each of the following:

1) If : $5^{x+3} = 7^{x+5}$, then $x = \dots\dots\dots$

2) $(5x - 2y) = (25x^2 + 10xy + y^2) = \dots\dots\dots$

3) If : $x = (\sqrt{2} + 3)^5$, $y = (\sqrt{2} - 3)^5$, then $xy = \dots\dots\dots$

4) In a mixed school there are 300 pupils , the probability of selecting perfect student is a boy 0.6 , then the number of girls is $\dots\dots\dots$

5) If : $a^2 + 2ab + b^2 = 25$, then $a + b = \dots\dots\dots$

[Q3] factorize completely each of the following :

A) $4a^4 - 9a^2 + 6a - 1$ ② $49x^2 - 25$

B) What is the real number which its double exceeds its multiplicative inverse by 1 ?

[Q4]

A) find the solution set in \mathbb{R} : $(x - 4)^5 = 32$

B) If : $\left(\frac{3}{5}\right)^{x+2} = \frac{125}{27}$ then find the value of x ?

[Q5]

A) If : $3^x = 27$, $4^{x+y} = 1$, then find the value of x and y

B) A box contains 7 black balls, 8 red balls and 5 white balls. If we draw one ball randomly, find the probability of getting : red ball
blue ball black or white ball

End of the questions

ALGEBRA – MODEL No**4****[Q1] Choose the correct answer:**(1) The S.S. in $R : x^2 + 9 = 0$ is

- a) $\{-3\}$ b) $\{3\}$ c) $\{-3, 3\}$ d) \emptyset

(2) If : $a - b = 9$, $a + b = 15$, then $a^2 - b^2 = \dots\dots\dots$

- a) 81 b) 135 c) 144 d) 225

(3) If : $x^2 + 14x + b$ is perfect square then $b = \dots\dots\dots$

- a) 2 b) 7 c) 14 d) 49

(4) $\frac{4 \times 2^{-1}}{3^{-1}} = \dots\dots\dots$

- a) 6 b) $\frac{1}{3}$ c) $\frac{1}{2}$ d) $\frac{1}{6}$

(5) If : 4 times a number is 48, then third of this number is

- a) 16 b) 12 c) 4 d) 8

(6) If : x is an odd number, then the next odd number is

- a) $X + 1$ b) $X + 2$ c) $X + 3$ d) $X + 4$

[Q2] Complete each of the following:1) If : $6^x = 7$, then $6^{x-2} = \dots\dots\dots$ 2) The solution set in $R : x^2 = 5x$ is3) Quarter of the number $2^{50} = 2 \dots\dots$ 4) If : $(x + 5)$ is one factor of : $x^3 + 125$ then the other factor is ...5) $1 \text{ L} = \dots\dots\dots \text{ cm}^3$.

[Q3]

A) Simplify : $\frac{4^{x+1} \times 9^{x-2}}{6^{2x}}$

B) Find the positive real number , if we add its twice to its square the result will be 35 ?

[Q4]

A) Factorize : $8y^3 + 1$ $x^2 - 10xy + 25y^2 - 36$

B) If : $8^{4x-1} = 32$, then find the value of x ?

[Q5]

A) Factorize : $4x^4 + 1$ $3x^2 + 7x + 2$

B) In a football league, the probability of a team to win is 0.6 and the probability of a draw is 0.3 .If the number of matches supposed to be played by that team is 30 matches .

How many matches do you predict the team draw ?

How many matches do you predict the team loss ?

End of the questions

ALGEBRA – MODEL No**5****[Q1] Choose the correct answer:**

(1) If: $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then $k = \dots\dots\dots$

- a) $-6x$ b) $-3x$ c) $3x$ d) $6x$

(2) If: $x^2 + y^2 = 7$, $xy = 3$, $(x - y)^2 = \dots\dots\dots$

- a) -1 b) 1 c) ± 1 d) 10

(3) If: $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

- a) $\frac{1}{512}$ b) $\frac{1}{8}$ c) $\frac{1}{2}$ d) 2

(4) If: $3^x = 5$, then $27^x = \dots\dots\dots$

- a) 9 b) 25 c) 125 d) 729

(5) If: $(x - 1)$ is one factor of: $x^2 - 4x + 3$ then the other factor is ...

- a) $X + 3$ b) $X - 3$ c) $X + 1$ d) $X - 4$

(6) If: $x^2 + 4x + a$ is perfect square then $a = \dots\dots\dots$

- a) 3 b) 4 c) 8 d) 16

[Q2] Complete each of the following:

1) If: $x + y = 7$, $x^2 - y^2 = 35$, $y - x = \dots\dots\dots$

2) The probability of an impossible event = $\dots\dots\dots$

3) If: $2^x = 5$, $2^{-y} = 3$, $2^{x+y} = \dots\dots\dots$

4) complete in the same pattern: $1, 4, 9, 16, 25, \dots\dots\dots$

5) If: $(25)^2 - (15)^2 = 10x$, then $x = \dots\dots\dots$

[Q3]

A) prove that : $\frac{(\sqrt{2})^2 \times 2^{1-x} \times 12^{2x-1}}{8^x \times 9^x} = \frac{1}{3}$

B) Two consecutive odd numbers there sum is 130 . find the two numbers ?

[Q4]

A) Factorize: ① $x^2 - 7x + 12$ ② $4x^4 + y^4$

B) If : $\frac{7^x \times 6^x}{14^2} = 3^{2-m}$, then find the value of $x + m$?

[Q5]

A) Factorize : ① $x^4 - 8x$ ② $ax - ay + x - y$

B) A basket contains balls numbered from 1 to 15 . a ball is drawn randomly. Calculate the probability of drawing ball carrying :

- ① An even number
- ② A number divisible by 3
- ③ A prim number

End of the questions

ALGEBRA – MODEL No**6****[Q1] Choose the correct answer:**(1) If $x^2 - y^2 = 24$, $x + y = 8$, then $x - y = \dots$

- a) 3 b) 4 c) 18 d) 30

(2) If $(x - y)^0 = 1$, then $x \in \dots$

- a) $\mathbb{R} - \{5\}$ b) $\mathbb{R} - \{-5\}$ c) $\{5\}$ d) \mathbb{R}

(3) The solution set of : $x^2 = 4x$ is where $x \in \mathbb{Q}$

- a) $\{4\}$ b) $\{0\}$ c) $\{0, 4\}$ d) ϕ

(4) The probability of sure event =

- a) 0 b) 1 c) -1 d) $\frac{1}{2}$

(5) If $x^3 - a = (x - 4)(x^2 + 4x + 16)$, then $a = \dots$

- a) 4 b) 8 c) 16 d) 64

(6) $4^3 + 4^3 + 4^3 + 4^3 = \dots$

- a) 4^3 b) 4^4 c) 4^{12} d) 4^{81}

[Q2] Complete each of the following:1) If : $x^2 + 10x + k$ is perfect square then $k = \dots$ 2) If $x^3 y^{-3} = 8$, then $\frac{x}{y} = \dots$ 3) If $2^y \times 5^y = 100$, then $y = \dots$ 4) If : $a - b = 7$, $a^2 + ab + b^2 = 9$, then $3a^3 - 3b^3 = \dots$ 5) If $2^x = 3$, then $8^x = \dots$

[Q3] factorize completely each of the following :

① $5x^2 - 25$

② $x^2 - 3x - 28$

③ $8 - x^3$

④ $4x^2 - 12x + 9$

[Q4]

A) Find the perimeter of rectangle its area is 40cm^2 and its length is 3cm. more than its width?

B) find the value of x in each equation of the following :

$2^{x-5} = 3^{2x-10} \quad (x+1)^5 = 32$

[Q5]

A) find in the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find the value of the result when $x = 1$

B) A box contains 30 cards numbered from 1 to 30 . a card is drawn randomly. Calculate the probability of drawing card carrying :

① an odd

② A number divisible by 5

③ A number is perfect square

End of the questions

ALGEBRA – MODEL No 7**[Q1] Choose the correct answer:**(1) If $x - y = 2$, $x + y = 7$, then $x^2 - y^2 = \dots\dots\dots$

- a) 9 b) 14 c) 28 d) 98

(2) If: $9x^2 - kx + 4$ is perfect square then $k = \dots\dots\dots$

- a) 6 b) 12 c) 36 d) 72

(3) If $6^x = 11$, then $6^{x+1} = \dots\dots\dots$

- a) 12 b) 22 c) 66 d) 72

(4) The solution set of: $x^2 + 1 = 0$ in R is $\dots\dots\dots$

- a)
- $\{1\}$
- b)
- $\{-1\}$
- c)
- $\{1, -1\}$
- d)
- ϕ

(5) If $(2x + 1)$ is factor of $2x^2 + 3x + 1$, then the other factor is ...

- a)
- $2x - 1$
- b)
- $x - 1$
- c)
- $x + 1$
- d)
- $x + 2$

(6) Sixth of the number $(2^{12} \times 3^{12}) = \dots\dots\dots$

- a)
- 6^2
- b)
- 6^4
- c)
- 6^{11}
- d)
- 6^{23}

[Q2] Complete each of the following:1) If tossing a fair die once, and observing the number on upper face, then the probability of getting a prime number = $\dots\dots\dots$ 2) If $x^4 y^{-4} = 16$, then $\frac{x}{y} = \dots\dots\dots$ 3) If $2^x = 15$, $2^y = 15$ then $2^{x-y} = \dots\dots\dots$ 4) If: $x + y = 8$, $x^3 + y^3 = 24$, then $x^2 - xy + y^2 = \dots\dots\dots$ 5) If the probability that a pupil succeed is 0.4 then the probability of his failure = $\dots\dots\dots$

[Q3] factorize completely each of the following :

① $xy - 5y + 6x - 30$ ② $x^2 + 7x + 6$

③ $x^3 - 125$ ④ $9x^2 - 16$

[Q4]

A) A positive integer , its square is more than its 3 times by 40 , find the number ?

B) If $x + x^{-1} = \sqrt{5}$, then find the value of : $x^2 + x^{-2}$ $x^3 + x^{-3}$

[Q5]

A) If $\frac{8^x \times 9^x}{18^x} = 64$, then find the value of 4^{-x}

B) In a football league, the probability of a team to win is 0.7 and the probability of a draw is 0.2 .if the number of matches supposed to be played by that team is 30 matches .

How many matches do you predict the team wins ?

How many matches do you predict the team loses ?

End of the questions

ALGEBRA — MODEL No**8****[Q1] Choose the correct answer:**

(1) $3^x + 3^x + 3^x = \dots\dots$

- a) 3^{2x} b) 3^{x+1} c) 3^x d) 9^{x+1}

(2) If: $x^2 + kx + 36$ is perfect square then $k = \dots\dots\dots$

- a) ± 6 b) ± 8 c) ± 12 d) ± 18

(3) If: $x^2 + 14x + k$ can be factorize, then $k = \dots\dots\dots$

- a) 2 b) 7 c) 14 d) 49

(4) If $2^x = 3$, $3^y = 2$, then $xy = \dots\dots\dots$

- a) 1 b) 2 c) 3 d) 6

(5) The solution set of: $x^2 = 9^0$ in R is $\dots\dots\dots$

- a) $\{-3, 3\}$ b) $\{1\}$ c) $\{-1\}$ d) $\{1, -1\}$

(6) If $a-b=3$, $x-y=5$, then $a(x-y) + b(x-y) = \dots\dots\dots$

- a) 8 b) 15 c) -8 d) -15

[Q2] Complete each of the following:

1) If chosen a digit from a number 37542, then the probability of getting an even number = $\dots\dots\dots$

2) If $2^{x-5} = (\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$, then $x^2 = \dots\dots\dots$

3) A quarter of the number $(\sqrt{2})^{12} = \dots\dots\dots$

4) If: $x+y=3$, $x^2-y^2=12$, then $x-y = \dots\dots\dots$

5) The probability of the impossible event = $\dots\dots\dots$

[Q3] factorize completely each of the following :

A) $8x^3 + 27$ $2x^2 - 18$

B) $x^2 + 7x + 12$ $ab - 3b + 5a - 15$

[Q4]

A) A positive integer , if we add its square to its 3 times the result will be 18 , what is the number ?

B) Use factorization to get the value of each of the following easily:

$(0.6)^2 - 1.2 \times 10.6 + (10.6)^2$ 98×102

[Q5]

A) prove that : $\frac{27^{x-1} \times 8^x}{(2\sqrt{2})^{2x} \times (3\sqrt{3})^{2x}} = \frac{1}{27}$

B) A class has 40 students, 30 students of them succeed in math , 24 students of them succeed in science , if one of them is chosen randomly from this class , find the probability that the student :
succeed in math failure in science

End of the questions

ALGEBRA – MODEL No 9**[Q1] Choose the correct answer:**

(1) $3x^0 = \dots\dots\dots$, where $x \neq 0$

- a) 0 b) 1 c) 3 d) $3x$

(2) If $x^2 - 5xy + 6y^2 = 10$, $x - 2y = 5$, then $x - 3y = ..$

- a) 2 b) 7 c) 14 d) 49

(3) $2^{20} + 2^{21} = \dots\dots\dots$

- a) 2×2^{40} b) 2×2^{41} c) 3×2^{20} d) 3×2^{21}

(4) If : $kx^2 + 6x - 27$ can be factorize , then $k = \dots\dots\dots$

- a) 6 b) 3 c) 9 d) 5

(5) If $x = 5$ is solution of $x^2 - 6x + n$, then $n = \dots\dots\dots$

- a) 5 b) -5 c) 4 d) -4

(6) $(5^{x+2} - 5^{x+1}) \div 5^x = \dots\dots\dots$

- a) 5 b) 10 c) 15 d) 20

[Q2] Complete each of the following:

1) If $k^2 + m^2 = 21$, $mk = 3$, then $(k + m)^2 = \dots\dots\dots$

2) If $(x + 1)$ is factor of $5x^2 - 2x - 7$, then the other factor is

3) If $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots$

4) If : $kx^2 + 20x + 25$ is perfect square , then $k = \dots\dots\dots$

5) If $x + y = 5$, $a + b = 3$ then $ax + xb + ay + yb = \dots\dots\dots$

[Q3] factorize completely each of the following :

A) $x^3 - 8$

$$9x^4 - 36y^4$$

B) $2x^2 + 10xy + 2y^2$

$$x^2 - y^2 + 5x + 5y$$

[Q4]


A) Two real numbers, the difference between them is 2 and the sum of their squares is 74 . Find the two numbers ?

B) Use factorization to get the value of each of the following easily: $2 \times (26.18)^2 - 2 \times (23.82)^2$

[Q5]

A) If $3^{x+1} = 81$, $4^{x+y} = 1$, then find the value of x and y ?

B) A numbered cards is selected randomly from a set of similar cards numbered from 1 to 24 , Find the probability of getting a card that carries : A multiple of 6 A number is perfect square


End of the questions

ALGEBRA – MODEL No**10****[Q1] Choose the correct answer:**(1) If $x^2 - m = (x - 7)(x + 7)$, then $m = \dots\dots\dots$

- a) 7 b) -7 c) 49 d) -49

(2) 1) If: $x^3 + y^3 = 15$, $x + y = 3$, then $x^2 - xy + y^2 = \dots$

- a) 3 b) 5 c) 15 d) 45

(3) If $x = 2$ is solution of $x^2 - 6x + k$, then $k = \dots\dots\dots$

- a) 8 b) -8 c) 4 d) -4

(4) If $2^x = 3$, $3^y = 16$, then $xy = \dots\dots\dots$

- a) 2 b) 4 c) -2 d) -4

(5) If: $x^2 + 7x + n$ can be factorize, then $n = \dots\dots\dots$

- a) 8 b) 10 c) 18 d) 49

(6) If: $0.05 \times 0.02 = 10^x$ then $x = \dots\dots\dots$

- a) -4 b) 0 c) 2 d) 4

[Q2] Complete each of the following:1) If $x^2 + ax + 25$ is perfect square, then $a = \dots\dots\dots$ 2) The S.S: $x(x - 3) = 5x$ in R is $\dots\dots\dots$ 3) If $2x^2 - 3x - 35 = (2x + m)(x - 5)$, then $m = \dots\dots\dots$ 4) $(x - 3)^0 = 1$ where $x \neq \dots\dots\dots$ 5) If $(\frac{1}{2})^x = 5$ then $8^{-x} = \dots\dots\dots$

[Q3] Factorize completely each of the following :

① $25x^2 - 49$

③ $x^2 - 8x + 12$

② $2x^3 + 250$

④ $ab + 4b + 5a + 20$

[Q4]

A) Find the length and width of rectangle its area is 40cm^2 and its length is 3cm. more than its width?

B) find the value of x in each equation of the following :

① $(\sqrt{3})^{x-1} = 9$

② $5^{x-1} \times 7^{1-x} = 1$

[Q5]

A) If $\frac{49^x \times 25^{2x} \times 3^{4x}}{(\sqrt{49})^{-x} \times (15)^{4x}} = 343$, then find the value of : 6^{2x}

B) in the experiment of composing 2-digit different number from the digits $\{1, 2, 3, 4\}$. find the sample space then Find the probability of getting :

① a number its tens is even

② a number both units and tens are even

End of the questions

ALGEBRA — MODEL No

1

[Q1] Choose the correct answer:(1) If $x^2 + 10x + k$ is perfect square, then $k = \dots\dots\dots$

- a) 100 ~~b) 25~~ c) 20 d) 10

(2) The solution set of: $3x^2 = 3x$ in \mathbb{R} is $\dots\dots\dots$

- a) $\{3, -1\}$ b) $\{-3, 1\}$ ~~c) $\{0, 1\}$~~ d) $\{1, 3\}$

(3) If $3^x = 5$, $3^y = 7$, then $3^{x+y} = \dots\dots\dots$

- a) 12 b) 15 c) 21 ~~d) 35~~

(4) If: $x^2 + ax - 12$ can be factorize, then $a = \dots\dots\dots$

- a) 7 b) 8 ~~c) 4~~ d) 13

(5) Which of the following is true ($x \in \mathbb{R}$)

- ~~a) $9^x > 0$~~ b) $x + 9 > 0$ c) $x^9 > 0$ d) $9x > 0$

(6) If the age of a man now is x year, then his age after 5 years is ...

- ~~a) $X + 5$~~ b) $X - 5$ c) $5x$ d) x

[Q2] Complete each of the following:1) If: $k^2 + m^2 = 21$, $km = 3$, then $k + m = \pm 3\sqrt{3}$

$$\begin{aligned} (k+m)^2 &= k^2 + 2km + m^2 \\ k^2 + 2km + m^2 &= 21 + 2(3) = 27 \\ \sqrt{k+m} &= \sqrt{27} \\ k+m &= 3\sqrt{3} \end{aligned}$$

2) If $(x + 1)$ is factor of $5x^2 - 2x - 7$, then the other factor is $(5x - 7)$

$$6^{12} = 6^1 = 6^{11}$$

3) If Sixth of the number $(2^{12} \times 3^{12}) = 6^k$, then $k = \dots\dots\dots$ 4) The S.S: $x^3 + 25x = 0$ in \mathbb{R} is $\{0\}$ 5) If $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots$

$$3^x(1+1+1) = 3^x \times 3 = 1$$

[Q3] factorize completely each of the following :

A) ① $x^6 - 7x^3 - 8$

$$(x^3 - 8)(x^3 + 1)$$

$$(x-2)(x^2+2x+4)(x+1)(x^2-x+1)$$

② $16x^2 - a^2 + 6ax - 9x^2$

$$16x^2 - (a^2 + 6ax - 9x^2)$$

$$16x^2 - (a - 3x)^2$$

$$(4x - a + 3x)(4x + a - 3x)$$

$$(7x - a)(x + a)$$

B) Use factorization to get the value of each of the following easily:

① $(14.06)^2 - 8.12 \times 14.06 + (4.06)^2$

$$14.06(14.06 - 8.12 + 4.06)$$

$$14.06 \times 20 = 281.2$$

② $(998)^2 - 4$

$$(998+2)(998-2)$$

$$1000 \times 996 = 996000$$

[Q4]

A) Find real number that its twice exceed to its multiplicative inverse

by 1? $2x - \frac{1}{x} = 1$

$$\frac{2x}{1} = \frac{1}{x}$$

$$2x^2 - 1 = x$$

$$2x^2 - x - 1 = 0$$

$$(2x+1)(x-1) = 0$$

$$x = -\frac{1}{2}$$

$$\text{or } x = 1$$

B) find the value of x in each of the following :

① $3^{x-1} = 27$

$$3^{x-1} = 3^3 \quad x-1 = 3 \quad x = 4$$

② $3^{x-3} = 2^{2x-6}$

$$x-3=0$$

$$x=3$$

$$2x-6=0$$

$$x=3$$

[Q5] A) If $\frac{8^x \times 3^{2x}}{18^x} = 64$, then find the value of 4^{-x}

$$\frac{1}{64} = 4^{-3} \quad \Rightarrow \quad 2x = 6 \quad x = 3$$

$$2^x \times 2^x \times 3^2 \times 3^2 = 64$$

$$2^x \times 2^x \times 3^4 = 64$$

$$2^{2x} = 64$$

$$2^{2x} = 2^6$$

B) A box contains 40 cards numbered from 1 to 40. a card is drawn randomly. Calculate the probability of drawing card carrying :

① An even number $\frac{1}{2}$

② A number divisible by 5 $\frac{8}{40} = \frac{1}{5}$

③ A number is perfect square $\frac{6}{40} = \frac{3}{20}$

④ A prim number less than 18 $\frac{7}{40}$

End of the questions

ALGEBRA – MODEL No

2

[Q1] Choose the correct answer:(1) If $x^2 - kx + 25$ is perfect square then $k = \dots\dots\dots$

a) 5

b) 25

c) ± 10 d) ± 5 (2) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$

a)

 4^4

b)

 $(16)^3$

c)

 4^{12}

d)

 4^{81} (3) If $x = \frac{\sqrt{9}}{\sqrt{3}}$, then $x^{-1} = \dots\dots\dots$

a)

 $\sqrt{3}$

b)

2

c)

 $\frac{\sqrt{3}}{\sqrt{2}}$

d)

 $\frac{\sqrt{3}}{3}$ (4) If $k - m = 9$, $k + m = 15$ then $k^2 - m^2 = \dots\dots\dots$

a) 135

b) 9

c) 150

d)

 $\frac{3}{5}$ (5) $2^0 + 2^{-1} - \left(\frac{-1}{\sqrt{2}}\right)^2 = \dots\dots\dots$

a) 2

b) 0

c) 1

d)

-1

(6) Quarter of $(\sqrt{2})^{12} = \dots\dots\dots$

a)

 $(\sqrt{2})^3$

b)

 2^3

c)

 2^4

d)

12

[Q2] Complete each of the following:

1) $x^2(x+1)(x-1) = (\dots\dots\dots - \dots\dots\dots)(x+1)$

2) $x^2 - 5x + 6 = (\dots\dots\dots - 3)(x - \dots\dots\dots)$

3) The probability of an impossible event = $\dots\dots\dots$

4) $x^3 + 8 = (\dots\dots\dots + 2)(x^2 - \dots\dots\dots + 4)$

5) $\sqrt{2} \times (\sqrt{2})^2 \times (\sqrt{2})^3 = \dots\dots\dots$ in the simplest form

[Q3]

- A) In a football league, the probability of a team to win is 0.6 and the probability of a draw is 0.3. If the number of matches supposed to be played by that team is 30 matches. $1 - (0.6 + 0.3) = 0.1$
How many matches do you predict the team loses? $0.1 \times 30 = 3$ matches

- B) The solution set of: $2x^2 - 5x = 3$ in \mathbb{R} is $\left\{-\frac{1}{2}, 3\right\}$

$$\begin{aligned} 2x^2 - 5x - 3 &= 0 \\ x^2 - 5x - 6 &= 0 \\ (x-6)(x+1) &= 0 \\ (x-3)(x+1) &= 0 \end{aligned}$$

$$\begin{aligned} x-3 &= 0 \Rightarrow x=3 \\ x+1 &= 0 \Rightarrow x=-1 \end{aligned}$$

[Q4]

- A) Find in the simplest form: $\frac{2^{2n+1} \times 5^{2n+1}}{10^{2n}}$

$$\frac{2^{2n+1} \times 5^{2n+1}}{2^{2n} \times 5^{2n}} = 2 \times 5 = 10$$

- B) If: $(9)^{x+3} = 3^{x+5}$, then find the value of x .

$$\begin{aligned} 3^{2(x+3)} &= 3^{x+5} \\ 2(x+3) &= x+5 \\ 2x+6 &= x+5 \\ x &= -1 \end{aligned}$$

[Q5] Factorize completely each of the following:

① $5x^2 - 3x - 2$

③ $a^2 - b^2c^4$

② $64x^4 + n^4$

④ $x^2 - 2xy + y^2 - z^2$

$$\begin{aligned} ① \quad & 5x^2 - 3x - 2 \\ & x^2 - 3x - 10 \\ & (x-5)(x+2) \\ & (x-1)(5x+2) \end{aligned}$$

End of the questions

③ $(a-bc)(a+bc)$

$$\begin{aligned} ② \quad & (64x^4 + 16x^2n^2 + n^4) - 16x^2n^2 \\ & (8x^2 + n^2)^2 - (4xn)^2 \\ & (8x^2 + n^2 + 4xn)(8x^2 + n^2 - 4xn) \end{aligned}$$

$$\begin{aligned} ④ \quad & (x-y)(x-y) - z^2 \\ & (x-y)^2 - z^2 \\ & (x-y+z)(x-y-z) \end{aligned}$$

ALGEBRA — MODEL No

3

[Q1] Choose the correct answer:(1) If: $a^2 - b^2 = 16$, $b - a = 2$, then $a + b = \dots\dots\dots$

- a) 4 b) -8 c) 8 d) 2

(2) If: $\sqrt{x+5} = 3$ then $\sqrt{x} = \dots\dots\dots$

- a) 0 b) 2 c) 4 d) 9

(3) The S S of: $x^2 + 4 = 0$ in R is $\dots\dots\dots$

- a) $\{-4\}$ b) $\{-2, 2\}$ c) $\{-4, 4\}$ d) ϕ

(4) Sixth of the number $(2^{12} \times 3^{12}) = \dots\dots\dots$

- a) 6^2 b) 6^{11} c) 6^4 d) 6^{23}

(5) If: $4x^2 + 12x + a$ is perfect square then $a = \dots\dots\dots$

- a) 6 b) 16 c) 1 d) 9

(6) If: $4^x = 5$, then $4^{x-1} = \dots\dots\dots$

- a) 1.25 b) 0.125 c) 0.8 d) 0.08

[Q2] Complete each of the following:1) If: $5^{x+3} = 7^{x+3}$, then $x = \dots\dots\dots$ 2) $(5x - 2y)^2 = (25x^2 + 10xy + y^2) = (5x + y)^2$ 3) If: $x = (\sqrt{2} + \sqrt{3})^5$, $y = (\sqrt{2} - \sqrt{3})^5$, then $xy = (2 - 3)^5 = -1$ 4) In a mixed school there are 300 pupils, the probability of selecting perfect student is a boy 0.6, then the number of girls is $\dots\dots\dots$
 $0.4 \times 300 = 120$ 5) If: $a^2 + 2ab + b^2 = 25$, then $a + b = \pm 5$
 $\sqrt{(a+b)^2} = \sqrt{25}$

[Q3] factorize completely each of the following : $(7x+5)(x-5)$

A) $4a^4 - (9a^2 + 6a - 1)$ ② $49x^2 - 25$

$4a^2 - (3a+1)^2$
 $(2a+3a+1)(2a-3a-1)$
 $(5a+1)(-a-1)$

B) What is the real number which its double exceeds its multiplicative inverse by 1? $x^2 - x - 2 = 0$
 $2x - \frac{1}{x} = 1 \quad (\times x)$
 $2x^2 - 1 = x$
 $2x^2 - x - 1 = 0$
 $(x-2)(x+\frac{1}{2}) = 0$
 $x-2=0 \quad 2x+1=0$
 $x=2 \quad x=-\frac{1}{2}$

[Q4]

A) find the solution set in R : $(x-4)^5 = 32$ 2^5
 $x-4=2$
 $x=6$
 $S.S = \{6\}$

B) If: $\left(\frac{3}{5}\right)^{x+2} = \frac{125}{27}$ then find the value of x ?

$\left(\frac{5}{3}\right)^3 = \left(\frac{3}{5}\right)^{-3}$
 $x+2 = -3$
 $x = -5$

[Q5]

A) If: $3^x = 27$, $4^{x+y} = 1$, then find the value of x and y

B) A box contains 7 black balls, 8 red balls and 5 white balls. If we

draw one ball randomly, find the probability of getting: red ball

blue ball black or white ball $\frac{12}{20} = \frac{3}{5}$

$\frac{8}{20} = \frac{2}{5}$

End of the questions

ALGEBRA — MODEL No

4

[Q1] Choose the correct answer:

(1) The S.S. in $R : x^2 + 9 = 0$ is

- a) $\{-3\}$ b) $\{3\}$ c) $\{-3, 3\}$ ~~d) \emptyset~~

(2) If: $a - b = 9$, $a + b = 15$, then $a^2 - b^2 = \dots\dots\dots$

- a) 81 ~~b) 135~~ c) 144 d) 225

(3) If: $x^2 + 14x + b$ is perfect square then $b = \dots\dots\dots$

- a) 2 b) 7 c) 14 ~~d) 49~~

(4) $\frac{4 \times 2^{-1}}{3^{-1}} = \dots\dots\dots$

- ~~a) 6~~ b) $\frac{1}{3}$ c) $\frac{1}{2}$ d) $\frac{1}{6}$

(5) If: 4 times a number is 48, then third of this number is

- a) 16 b) 12 ~~c) 4~~ ~~d) 8~~

(6) If: x is an odd number, then the next odd number is

- a) $X + 1$ ~~b) $X + 2$~~ c) $X + 3$ d) $X + 4$

[Q2] Complete each of the following:

1) If: $6^x = 7$, then $6^{x-2} = \frac{7}{36}$ 2) The solution set in $R : x^2 = 5x$ is $\{0, 5\}$ 3) Quarter of the number $2^{50} = 2^{48}$ 4) If: $(x + 5)$ is one factor of: $x^3 + 125$ then the other factor is $(x^2 - 5x + 25)$ 5) $1 \text{ L} = 1000 \text{ cm}^3$

$$\frac{6^x}{6^2} = \frac{7}{36}$$

$$\begin{aligned} x^2 - 5x &= 0 \\ x(x-5) &= 0 \\ x=0 \quad | \quad x=5 \end{aligned}$$

$$\frac{2^{50}}{2^2} = 2^{48}$$

[Q3]

A) Simplify: $\frac{4^{x+1} \times 9^{x-2}}{6^{2x}}$

$$\frac{2^{2x+2} \times 3^{2x-4}}{2^{2x} \times 3^{2x}} = 2^2 \times 3^{-6} = \frac{2^2}{3^6} = \frac{4}{81}$$

B) Find the positive real number, if we add its twice to its square the result will be 35?

No. is $x \rightarrow 2x + x^2 = 35$ $x = -7$ $x = 5$
 $x^2 + 2x - 35 = 0$
 $(x+7)(x-5)$ $\therefore x = 5$

[Q4]

A) Factorize: $8y^3 + 1$

$(2y+1)(4y^2-2y+1)$

$(x-5y)^2 - (6)^2$
 $(x-5y+6)(x-5y-6)$
 $x^2 - 10xy + 25y^2 - 36$

B) If $2^{2x-3} = 32$, then find the value of x ?

$2^{2x-3} = 2^5 \therefore x = \frac{8}{2} = 4$
 $12x-3=5$
 $12x=8$

[Q5]

A) Factorize: $4x^4 + 1$

$(2x^2+1)(2x^2+1-2x)$

$(4x^4 + 4x^2 + 1) - 4x^2$
 $(2x^2+1)^2 - (2x)^2$
 $x^2 + 7x + 6$
 $(x+6)(x+1)$
 $3x^2 + 7x + 2$
 $(x+2)(3x+1)$

B) In a football league, the probability of a team to win is 0.6 and the probability of a draw is 0.3. If the number of matches supposed to be played by that team is 30 matches.

How many matches do you predict the team draw? $30 \times 0.3 = 9$

How many matches do you predict the team loss? $30 \times 0.1 = 3$

End of the questions

ALGEBRA — MODEL NO

5

[Q1] Choose the correct answer:

(1) If: $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then $k = \dots\dots\dots$

- a)
- $-6x$
- ~~b) $-3x$~~
- c)
- $3x$
- d)
- $6x$

(2) If: $x^2 + y^2 = 7$, $xy = 3$, $(x - y)^2 = \dots\dots\dots$

- a)
- -1
- ~~b) 1~~
- c)
- ± 1
- d)
- 10

(3) If: $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

- a)
- $\frac{1}{512}$
- b)
- $\frac{1}{8}$
- ~~c) $\frac{1}{2}$~~
- d)
- 2

(4) If: $3^x = 5$, then $27^x = \dots\dots\dots$

- a)
- 9
- b)
- 25
- ~~c) 125~~
- d)
- 729

(5) If: $(x - 1)$ is one factor of: $x^2 - 4x + 3$ then the other factor is ...

- a)
- $x + 3$
- ~~b) $x - 3$~~
- c)
- $x + 1$
- d)
- $x - 4$

(6) If: $x^2 + 4x + a$ is perfect square then $a = \dots\dots\dots$

- a)
- 3
- ~~b) 4~~
- c)
- 8
- d)
- 16

[Q2] Complete each of the following:

1) If: $x + y = 7$, $x^2 - y^2 = 35$, $y - x = \dots\dots\dots -5$

2) The probability of an impossible event = $\dots\dots\dots 0$

3) If: $2^x = 5$, $2^{-y} = 3$, $2^{x+y} = \dots\dots\dots \frac{5}{3}$ \div

4) complete in the same pattern: $1, 4, 9, 16, 25, \dots\dots\dots 36$

5) If: $(25)^2 - (15)^2 = 10x$, then $x = \dots\dots\dots 40$

$$\frac{2 \times 2^{1-x} \times 2^{2x-1} \times 2^{2x-1} \times 3^{2x-1}}{2^x \times 2^x \times 2^x \times 3^x \times 3^x}$$
$$= 2^0 \times 3^{-1} = \frac{1}{3}$$

x and $x+2$

$$\begin{aligned} 2x + 2 &= 130 \\ 2x &= 128 \\ x &= 64 \end{aligned}$$

64066

$$(x-4)(x-3) \neq$$
$$\begin{aligned} & 4x^4 + 4x^2y^2 + y^4 - 4x^2y^2 \\ & (2x^2 + y^2)^2 - (2xy)^2 \\ & \textcircled{2} \quad 4x^4 + y^4 \\ & (2x^2 + y + xy)(2x^2 + y - xy) \end{aligned}$$

B) If: $\frac{7^x \times 6^x}{14^2} = 3^{2-m}$, then find the value of $x + m$?
 $\frac{7^x \times 2^x \times 3^x}{2^2 \times 7^2} = 3^{2-m}$ $\therefore x = 2 - m \quad \therefore x + m = 2$

$$x(x^3 - 8)$$

$$x(x-2)(x^2+2x+4)$$
$$\begin{aligned} & ax + x - ay - y \\ & x(a+1) - y(a+1) \\ & \textcircled{2} \quad ax - ay + x - y \\ & (a+1)(x-y) \end{aligned}$$

① An even number

7
15

② A number divisible by 3

$$\sqrt[3]{5} = \frac{1}{3}$$

③ A prim number

$$\frac{6}{15} = \frac{2}{5}$$

ACADEMIC YEAR 2022 - 2023

ALGEBRA - MODEL No

6

[Q1] Choose the correct answer:(1) If $x^2 - y^2 = 24$; $x + y = 8$, then $x - y = \dots$

- a) 3 b) 4 c) 18 d) 30

(2) If $(x - 5)^0 = 1$, then $x \in \dots$

- a) $\mathbb{R} - \{5\}$ b) $\mathbb{R} - \{-5\}$ c) $\{5\}$ d) \mathbb{R}

(3) The solution set of: $x^2 = 4x$ is where $x \in \mathbb{Q}$

- a) $\{4\}$ b) $\{0\}$ c) $\{0, 4\}$ d) ϕ

(4) The probability of sure event =

- a) 0 b) 1 c) -1 d) $\frac{1}{2}$

(5) If $x^3 - a = (x - 4)(x^2 + 4x + 16)$, then $a = \dots$

- a) 4 b) 8 c) 16 d) 64

(6) $4^3 + 4^3 + 4^3 + 4^3 = \dots$

- a) 4^3 b) 4^4 c) 4^{12} d) 4^{81}

[Q2] Complete each of the following:1) If: $x^2 + 10x + k$ is perfect square then $k = \dots 25$ 2) If $x^3 y^{-3} = 8$, then $\frac{x}{y} = \dots 2$ 3) If $2^y \times 5^y = 100$, then $y = \dots 2$

$$10^y = 100 \quad y = 2$$

4) If: $a - b = 7$, $a^2 + ab + b^2 = 9$, then $3a^3 - 3b^3 = \dots 189$

$$3(a-b)(a^2+ab+b^2)$$

$$3 \times 7 \times 9 = 189$$

5) If $2^x = 3$, then $8^x = \dots 27$

$$(2^3)^x = (2^x)^3 = 3^3 = 27$$

$$5x^2 - 125 = 5(x^2 - 25) = 5(x+5)(x-5)$$

[Q3] factorize completely each of the following :

① $5x^2 - 25$

$5(x^2 - 5)$

②

$x^2 - 3x - 28$

$(x+4)(x-7)$

③ $8 - x^3$

$(2-x)(4+2x+x^2)$

④

$4x^2 - 12x + 9$

$(2x-3)^2$

[Q4]

A) Find the perimeter of rectangle its area is 40cm^2 and its length is 3cm. more than its width?

$w = 5$

$L = 8$

$P = 26\text{cm}$

$w = x$

$L = x + 3$

$x(x+3) = 40$

$x^2 + 3x - 40 = 0$

$(x+8)(x-5)$

$x = -8$

$x = 5$

B) find the value of x in each equation of the following :

$2^{x-5} = 3^{2x-10}$

$x=5 = 2x-10$

$5 = x$

$(x+1)^2 = 32$

$x+1 = 2$

$x = 1$

[Q5]

A) find in the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find the value of the result when $x = 1$

$2^{2x+2} \times 3^{2-x} \times 3^{2-x}$

$2^{2x} \times 3^{2x}$

$4 \times 3^{4-4x} = 4 \times 3^0 = 4$

B) A box contains 30 cards numbered from 1 to 30 . a card is drawn randomly. Calculate the probability of drawing card carrying :

① an odd $\frac{1}{2}$

② A number divisible by 5 $\frac{6}{30} = \frac{1}{5}$

③ A number is perfect square $\frac{5}{30} = \frac{1}{6}$



End of the questions

ALGEBRA — MODEL No

7

[Q1] Choose the correct answer:(1) If $x - y = 2$, $x + y = 7$, then $x^2 - y^2 = \dots\dots\dots$

- a) 9 ~~b) 14~~ c) 28 d) 98

(2) If: $9x^2 - kx + 4$ is perfect square then $k = \dots\dots\dots$

- a) 6 ~~b) 12~~ c) 36 d) 72

(3) If $6^x = 11$, then $6^{x+1} = \dots\dots\dots$

- a) 12 b) 22 ~~c) 66~~ d) 72

(4) The solution set of: $x^2 + 1 = 0$ in \mathbb{R} is $\dots\dots\dots$

- a) $\{1\}$ b) $\{-1\}$ c) $\{1, -1\}$ ~~d) ϕ~~

(5) If $(2x + 1)$ is factor of $2x^2 + 3x + 1$, then the other factor is ...

- a) $2x - 1$ b) $x - 1$ ~~c) $x + 1$~~ d) $x + 2$

(6) Sixth of the number $(2^{12} \times 3^{12}) = \dots\dots\dots$

- a) 6^2 b) 6^4 ~~c) 6^{11}~~ d) 6^{23}

[Q2] Complete each of the following:

1) If tossing a fair die once, and observing the number on upper face, then the probability of getting a prime number = $\frac{1}{2}$

2) If $x^4 y^{-4} = 16$, then $\frac{x}{y} = \dots\dots\dots 2$

$$\left(\frac{x}{y}\right)^4 = 2^4 \quad 2$$

3) If $2^x = 15$, $2^y = 15$ then $2^{x-y} = \dots\dots\dots 1$

$$15 \div 15 = 1$$

4) If: $x + y = 8$, $x^3 + y^3 = 24$, then $x^2 - xy + y^2 = \dots\dots\dots 3$

5) If the probability that a pupil succeed is 0.4 then the probability of his failure = 0.6

[Q3] factorize completely each of the following :

① $xy - 5y + 6x - 30$ ② $x^2 + 7x + 6$ $(x+6)(x+1)$

③ $x^3 - 125$ ④ $9x^2 - 16$ $(3x-4)(3x+4)$
 $(x-5)(x^2+5x+25)$

[Q4]

A) A positive integer, its square is more than its 3 times by 40, find the number ?

$$x^2 - 3x = 40, \quad (x-8)(x+5) = 0$$

$$x^2 - 3x - 40 = 0 \quad \boxed{x=8} \quad x=-5 \alpha$$

B) If $x + x^{-1} = \sqrt{5}$, then find the value of : $x^2 + x^{-2} = 3$ $x^3 + x^{-3}$
 $(x+x^{-1})^2 = (\sqrt{5})^2$ $x^2 + x^{-2} = 3$

[Q5]

A) If $\frac{8^x \times 9^x}{18^x} = 64$, then find the value of 4^{-x} $\frac{1}{64}$

$$\left(\frac{8 \times 9}{18}\right)^x = (4)^x = 64$$

$$4^x = 4^3$$

$$x = 3$$

B) In a football league, the probability of a team to win is 0.7 and the probability of a draw is 0.2. if the number of matches supposed to be played by that team is 30 matches.

How many matches do you predict the team wins ? 21

How many matches do you predict the team loses ? 3

End of the questions

ALGEBRA — MODEL No

8

[Q1] Choose the correct answer:

(1) $3^x + 3^x + 3^x = \dots\dots$

- a) 3^{2x} ~~b) 3^{x+1}~~ c) 3^x d) 9^{x+1}

(2) If: $x^2 + kx + 36$ is perfect square then $k = \dots\dots\dots$

- a) ± 6 b) ± 8 ~~c) ± 12~~ d) ± 18

(3) If: $x^2 + 14x + k$ can be factorize, then $k = \dots\dots\dots$

- a) 2 b) 7 c) 14 ~~d) 49~~

(4) If $2^x = 3$, $3^y = 2$, then $xy = \dots\dots$

- ~~a) 1~~ b) 2 c) 3 d) 6

(5) The solution set of: $x^2 = 9^0$ in R is $\dots\dots\dots$

- a) $\{-3, 3\}$ b) $\{1\}$ c) $\{-1\}$ ~~d) $\{1, -1\}$~~

(6) If $a-b=3$, $x-y=5$, then $a(x-y) - b(x-y) = \dots\dots\dots$

- a) 8 ~~b) 15~~ c) -8 d) -15

[Q2] Complete each of the following:

1) If chosen a digit from a number 37542, then the probability of getting an even number = $\frac{2}{5}$

2) If $2^{x-5} = (\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$, then $x^2 = 36$

3) A quarter of the number $(\sqrt{2})^{12} = 16$

4) If: $x+y=3$, $x^2 - y^2 = 12$, then $x-y = 4$

5) The probability of the impossible event = 0

[Q3] factorize completely each of the following :

A) $8x^3 + 27 \quad 2x^2 - 18$ $\frac{2(x^2 - 9)}{2(x-3)(x+3)}$

B) $x^2 + 7x + 12$ $(x+4)(x+3)$ $ab - 3b + 5a - 15$ $b(a-3) + 5(a-3) \rightarrow (b+5)(a-3)$

[Q4]

$x^2 + 3x - 18 = 0$ $x = -6$ $x = 3$
 $(x+6)(x-3) = 0$

A) A positive integer, if we add its square to its 3 times the result will be 18, what is the number?

B) Use factorization to get the value of each of the following easily:

$(0.6)^2 - 1.2 \times 10.6 + (10.6)^2$ 98×102 $(100-2)(100+2)$
 $10.6(10.6 - 1.2 + 10.6) = 10.6 \times 20 = 212$ $10000 - 4 = 9996$

[Q5]

A) prove that: $\frac{27^{x-1} \times 8^x}{(2\sqrt{2})^{2x} \times (3\sqrt{3})^{2x}} = \frac{1}{27}$

$\frac{3^{3x-3} \times 2^{3x}}{2^{2x} \times \sqrt{2}^{2x} \times 3^{2x} \times \sqrt{3}^{2x}}$
 $\frac{3^{3x-3} \times 2^{3x}}{2^{2x} \times 2^x \times 3^{2x} \times 3^x} = \frac{3^{-3} \times 2^0}{1} = \frac{1}{27}$

B) A class has 40 students, 30 students of them succeed in math, 24 students of them succeed in science, if one of them is chosen randomly from this class, find the probability that the student:

succeed in math failure in science $\frac{16}{40} = \frac{2}{5}$

$\frac{30}{40} = \frac{3}{4}$

End of the questions

ALGEBRA — MODEL No 9

[Q1] Choose the correct answer:

(1) $3x^0 = \dots\dots\dots$, where $x \neq 0$

- a) 0 b) 1 ~~c) 3~~ d) $3x$

(2) If $x^2 - 5xy + 6y^2 = 10$, $x - 2y = 5$, then $x - 3y = \dots$

- ~~a) 2~~ b) 7 c) 14 d) 49

(3) $2^{20} + 2^{21} = \dots\dots\dots$

- a) 2×2^{40} b) 2×2^{41} ~~c) 3×2^{20}~~ d) 3×2^{21}

(4) If: $kx^2 + 6x - 27$ can be factorize, then $k = \dots\dots\dots$

- a) 6 b) 3 c) 9 ~~d) 5~~

(5) If $x = 5$ is solution of $x^2 - 6x + n$, then $n = \dots\dots\dots$

- a) 5 b) -5 c) 4 ~~d) -4~~

(6) $(5^{x+2} - 5^{x+1}) \div 5^x = \dots\dots\dots$ $(5^x \times 5^2) - (5^x \times 5) = \frac{5^x(5^2 - 5)}{5^x} = 5$

- a) 5 b) 10 c) 15 ~~d) 20~~

[Q2] Complete each of the following:

1) If $k^2 + m^2 = 21$, $mk = 3$, then $(k + m)^2 = \dots\dots\dots 27$

2) If $(x + 1)$ is factor of $5x^2 - 2x - 7$, then the other factor is $(5x - 7)$

3) If $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots -1$ $3^x(3) = 3^{x+1} = 1$
 $x+1=0$
 $x=-1$

4) If: $kx^2 + 20x + 25$ is perfect square, then $k = \dots\dots\dots 4$ $\frac{(m)^2}{4(3^{rd})}$

5) If $x + y = 5$, $a + b = 3$ then $ax + xb + ay + yb = \dots\dots\dots 15$
 $x(a+b) + y(a+b)$
 $(x+y)(a+b)$
 $5 \times 3 = 15$

[Q3] factorize completely each of the following:

A) $x^3 - 8$ $(x-2)(x^2+2x+4)$ $9x^4 - 36y^4$ $9(x^4 - 4y^4)$ $9(x^2+2y^2)(x^2-2y^2)$

B) $2x^2 + 10xy + 2y^2$ $2(x^2 + 5xy + y^2)$ $(x+y)(x-y) + 5(x+y)$ $(x+y)(x-y+5)$

[Q4] x $(x+2)$ $x^2 + (x+2)^2 = 74$ $2x^2 + 4x - 70 = 0$ $2(x^2 + 2x - 35) = 0$

A) Two real numbers, the difference between them is 2 and the sum of their squares is 74. Find the two numbers? $x = -7$ $x = 5$

B) Use factorization to get the value of each of the following easily: $2 \times (26.18)^2 - 2 \times (23.82)^2$ $2((26.18)^2 - (23.82)^2)$ $2(26.18+23.82)(26.18-23.82)$ $2 \times 50 \times 2.36 = 236$

[Q5] A $x+1=4$ $x=3$ $x+y=0$ $3+y=0$ $y=-3$

A) If $3^{x+1} = 81$, $4^{x+y} = 1$, then find the value of x and y ? $x=3$ $y=-3$

B) A numbered cards is selected randomly from a set of similar cards numbered from 1 to 24, Find the probability of getting a card that carries : A multiple of 6 A number is perfect square.

$\frac{4}{24} = \frac{1}{6}$ $\frac{4}{24} = \frac{1}{6}$

End of the questions

ALGEBRA — MODEL No

10

[Q1] Choose the correct answer:(1) If $x^2 - m = (x - 7)(x + 7)$, then $m = \dots\dots\dots$

- a) 7 b) -7 ~~c) 49~~ d) -49

(2) 1) If: $x^3 + y^3 = 15$, $x + y = 3$, then $x^2 - xy + y^2 = \dots$

- a) 3 ~~b) 5~~ c) 15 d) 45

(3) If $x = 2$ is solution of $x^2 - 6x + k$, then $k = \dots\dots\dots$

- ~~a) 8~~ b) -8 c) 4 d) -4

(4) If $2^x = 3$, $3^y = 16$, then $xy = \dots\dots\dots$

- a) 2 ~~b) 4~~ c) -2 d) -4

(5) If: $x^2 + 7x + n$ can be factorize, then $n = \dots\dots\dots$

- a) 8 ~~b) 10~~ c) 18 d) 49

(6) If: $0.05 \times 0.02 = 10^x$ then $x = \dots\dots\dots$

- a) ~~3~~ ~~b) 0~~ c) 2 d) 4

[Q2] Complete each of the following:1) If $x^2 + ax + 25$ is perfect square, then $a = \dots\dots\dots 10$ 2) The S.S: $x(x - 3) = 5x$ in R is $\{0, 8\}$ 3) If $2x^2 - 3x - 35 = (2x + m)(x - 5)$, then $m = \dots\dots\dots 7$ 4) $(x - 3)^0 = 1$ where $x \neq \dots\dots\dots 3$ 5) If $(\frac{1}{2})^x = 5$ then $8^{-x} = \dots\dots\dots 125$

$$\begin{aligned} (2^{-1})^x &= 5 \\ 2^{-x} &= 5 \\ (2^3)^{-x} &= (2^{-x})^3 \\ &= (5)^3 \\ &= 125 \end{aligned}$$

[Q3] Factorize completely each of the following: $(x-6)(x-2)$

① $25x^2 - 49$ $(5x+7)(5x-7)$ ③ $x^2 - 8x + 12$

② $2x^3 + 250$ $2(x^3 + 125)$ ④ $ab + 4b + 5a + 20$
 $2(x+5)(x^2 - 5x + 25)$ $b(a+4) + 5(a+4)$

$(b+5)(a+4)$

[Q4]

A) Find the length and width of rectangle its area is 40cm^2 and its

length is 3cm. more than its width? $x^2 + 3x - 40 = 0$
 $(x+8)(x-5) = 0$
 $x = -8$ $x = 5$
 x

B) find the value of x in each equation of the following:

① $(\sqrt{3})^{x-1} = 9$
 $x-1 = 4$ $x = 5$

② $5^{x-1} \times 7^{1-x} = 1$

$x-1 = 0$
 $x = 1$
 $1-x = 0$
 $x = 1$

[Q5]

A) If $\frac{49^x \times 25^{2x} \times 3^{4x}}{(\sqrt{49})^{-x} \times (15)^{4x}} = 343$, then find the value of: 6^{2x} 3^{x-3}
 $6^{2x} = 36$ $x = 1$

B) in the experiment of composing 2-digit different number from the digits $\{1, 2, 3, 4\}$. find the sample space then Find the

probability of getting:

① a number its tens is even $\frac{1}{2}$

② a number both units and tens are even $\frac{1}{6}$

$S = \{12, 13, 14, 21, 23, 24, 31, 32, 34, 41, 42, 43\}$

$n(S) = 12$

(End of the questions

ALGEBRA – MODEL No

1

[Q1] Choose the correct answer:

(1) If $x^2 - y^2 = 24$, $x + y = 8$, then $x - y = \dots$

- a) 3 b) 4 c) 18 d) 30

(2) If $(x - y)^0 = 1$, then $x \in \dots$

- a) $R - \{5\}$ b) $R - \{-5\}$ c) $\{5\}$ d) R

(3) The solution set of: $x^2 = 4x$ is where $x \in Q$

- a) $\{4\}$ b) $\{0\}$ c) $\{0, 4\}$ d) ϕ

(4) The probability of sure event =

- a) 0 b) 1 c) -1 d) $\frac{1}{2}$

(5) If $x^3 - a = (x - 4)(x^2 + 4x + 16)$, then $a = \dots$

- a) 4 b) 8 c) 16 d) 64

(6) $4^3 + 4^3 + 4^3 + 4^3 = \dots$

- a) 4^3 b) 4^4 c) 4^{12} d) 4^{81}

[Q2] Complete each of the following:

1) If: $x^2 + 10x + k$ is perfect square then $k = \dots$

2) If $x^3 y^{-3} = 8$, then $\frac{x}{y} = \dots$

3) If $2^y \times 5^y = 100$, then $y = \dots$

4) If: $a - b = 7$, $a^2 + ab + b^2 = 9$, then $3a^3 - 3b^3 = \dots$

5) If $2^x = 3$, then $8^x = \dots$

[Q3] factorize completely each of the following :

① $5x^2 - 25$

② $x^2 - 3x - 28$

③ $8 - x^3$

④ $4x^2 - 12x + 9$

[Q4]

A) Find the perimeter of rectangle its area is 40cm^2 and its length is 3cm. more than its width?

B) find the value of x in each equation of the following :

$2^{x-5} = 3^{2x-10}$ $(x+1)^5 = 32$

[Q5]


A) find in the simplest form : $\frac{4^{x+1} \times 9^{2-x}}{6^{2x}}$, then find the value of the result when $x = 1$

B) A box contains 30 cards numbered from 1 to 30 . a card is drawn randomly. Calculate the probability of drawing card carrying :

① an odd

② A number divisible by 5

③ A number is perfect square


End of the questions

ALGEBRA – MODEL No 2**[Q1] Choose the correct answer:**

- (1) If $x - y = 2$, $x + y = 7$, then $x^2 - y^2 = \dots\dots\dots$
a) 9 b) 14 c) 28 d) 98
- (2) If: $9x^2 - kx + 4$ is perfect square then $k = \dots\dots\dots$
a) 6 b) 12 c) 36 d) 72
- (3) If $6^x = 11$, then $6^{x+1} = \dots\dots\dots$
a) 12 b) 22 c) 66 d) 72
- (4) The solution set of: $x^2 + 1 = 0$ in R is $\dots\dots\dots$
a) $\{1\}$ b) $\{-1\}$ c) $\{1, -1\}$ d) ϕ
- (5) If $(2x + 1)$ is factor of $2x^2 + 3x + 1$, then the other factor is ...
a) $2x - 1$ b) $x - 1$ c) $x + 1$ d) $x + 2$
- (6) Sixth of the number $(2^{12} \times 3^{12}) = \dots\dots\dots$
a) 6^2 b) 6^4 c) 6^{11} d) 6^{23}

[Q2] Complete each of the following:

- 1) If tossing a fair die once, and observing the number on upper face, then the probability of getting a prime number = $\dots\dots\dots$
- 2) If $x^4 y^{-4} = 16$, then $\frac{x}{y} = \dots\dots\dots$
- 3) If $2^x = 15$, $2^y = 15$ then $2^{x-y} = \dots\dots\dots$
- 4) If: $x + y = 8$, $x^3 + y^3 = 24$, then $x^2 - xy + y^2 = \dots$
- 5) If the probability that a pupil succeed is 0.4 then the probability of his failure = $\dots\dots\dots$

[Q3] factorize completely each of the following :

① $xy - 5y + 6x - 30$ ② $x^2 + 7x + 6$

③ $x^3 - 125$ ④ $9x^2 - 16$

[Q4]

A) A positive integer , its square is more than its 3 times by 40 , find the number ?

B) If $x + x^{-1} = \sqrt{5}$, then find the value of : $x^2 + x^{-2}$ $x^3 + x^{-3}$

[Q5]

A) If $\frac{8^x \times 9^x}{18^x} = 64$, then find the value of 4^{-x}

B) In a football league, the probability of a team to win is 0.7 and the probability of a draw is 0.2 .if the number of matches supposed to be played by that team is 30 matches .

How many matches do you predict the team wins ?

How many matches do you predict the team loses ?

End of the questions

ALGEBRA – MODEL No 3**[Q1] Choose the correct answer:**

(1) $3^x + 3^x + 3^x = \dots\dots\dots$

- a) 3^{2x} b) 3^{x+1} c) 3^x d) 9^{x+1}

(2) If: $x^2 + kx + 36$ is perfect square then $k = \dots\dots\dots$

- a) ± 6 b) ± 8 c) ± 12 d) ± 18

(3) If: $x^2 + 14x + k$ can be factorize, then $k = \dots\dots\dots$

- a) 2 b) 7 c) 14 d) 49

(4) If $2^x = 3$, $3^y = 2$, then $xy = \dots\dots\dots$

- a) 1 b) 2 c) 3 d) 6

(5) The solution set of: $x^2 = 9^0$ in R is $\dots\dots\dots$

- a) $\{-3, 3\}$ b) $\{1\}$ c) $\{-1\}$ d) $\{1, -1\}$

(6) If $a-b = 3$, $x-y = 5$, then $a(x-y) + b(x-y) = \dots\dots\dots$

- a) 8 b) 15 c) -8 d) -15

[Q2] Complete each of the following:

1) If chosen a digit from a number 37542, then the probability of getting an even number = $\dots\dots\dots$

2) If $2^{x-5} = (\sqrt{5} - \sqrt{3})(\sqrt{5} + \sqrt{3})$, then $x^2 = \dots\dots\dots$

3) A quarter of the number $(\sqrt{2})^{12} = \dots\dots\dots$

4) If: $x + y = 3$, $x^2 - y^2 = 12$, then $x - y = \dots\dots\dots$

5) The probability of the impossible event = $\dots\dots\dots$

[Q3] factorize completely each of the following :

A) $8x^3 + 27$ $2x^2 - 18$

B) $x^2 + 7x + 12$ $ab - 3b + 5a - 15$

[Q4]

A) A positive integer , if we add its square to its 3 times the result will be 18 , what is the number ?

B) Use factorization to get the value of each of the following easily:

$(0.6)^2 - 1.2 \times 10.6 + (10.6)^2$ 98×102

[Q5]

A) prove that : $\frac{27^{x-1} \times 8^x}{(2\sqrt{2})^{2x} \times (3\sqrt{3})^{2x}} = \frac{1}{27}$

B) A class has 40 students, 30 students of them succeed in math , 24 students of them succeed in science , if one of them is chosen randomly from this class , find the probability that the student :
succeed in math failure in science

End of the questions

ALGEBRA – MODEL No**4****[Q1] Choose the correct answer:**

(1) $3x^0 = \dots\dots\dots$, where $x \neq 0$

- a) 0 b) 1 c) 3 d)
- $3x$

(2) If $x^2 - 5xy + 6y^2 = 10$, $x - 2y = 5$, then $x - 3y = ..$

- a) 2 b) 7 c) 14 d) 49

(3) $2^{20} + 2^{21} = \dots\dots\dots$

- a)
- 2×2^{40}
- b)
- 2×2^{41}
- c)
- 3×2^{20}
- d)
- 3×2^{21}

(4) If : $kx^2 + 6x - 27$ can be factorize , then $k = \dots\dots\dots$

- a) 6 b) 3 c) 9 d) 5

(5) If $x = 5$ is solution of $x^2 - 6x + n$, then $n = \dots\dots\dots$

- a) 5 b) -5 c) 4 d) -4

(6) $(5^{x+2} - 5^{x+1}) \div 5^x = \dots\dots\dots$

- a) 5 b) 10 c) 15 d) 20

[Q2] Complete each of the following:

1) If $k^2 + m^2 = 21$, $mk = 3$, then $(k + m)^2 = \dots\dots\dots$

2) If $(x + 1)$ is factor of $5x^2 - 2x - 7$, then the other factor is

3) If $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots$

4) If : $kx^2 + 20x + 25$ is perfect square , then $k = \dots\dots\dots$

5) If $x + y = 5$, $a + b = 3$ then $ax + xb + ay + yb = \dots\dots\dots$

[Q3] factorize completely each of the following :

A) $x^3 - 8$

$9x^4 - 36y^4$

B) $2x^2 + 10xy + 2y^2$

$x^2 - y^2 + 5x + 5y$

[Q4]

A) Two real numbers, the difference between them is 2 and the sum of their squares is 74. Find the two numbers ?

B) Use factorization to get the value of each of the following

easily: $2 \times (26.18)^2 - 2 \times (23.82)^2$

[Q5]

A) If $3^{x+1} = 81$, $4^{x+y} = 1$, then find the value of x and y ?

B) A numbered cards is selected randomly from a set of similar cards numbered from 1 to 24, Find the probability of getting a card that carries : A multiple of 6 A number is perfect square

End of the questions

ALGEBRA – MODEL No

5

[Q1] Choose the correct answer:(1) If $x^2 - m = (x - 7)(x + 7)$, then $m = \dots\dots\dots$

- a) 7 b) -7 c) 49 d) -49

(2) 1) If: $x^3 + y^3 = 15$, $x + y = 3$, then $x^2 - xy + y^2 = \dots\dots\dots$

- a) 3 b) 5 c) 15 d) 45

(3) If $x = 2$ is solution of $x^2 - 6x + k$, then $k = \dots\dots\dots$

- a) 8 b) -8 c) 4 d) -4

(4) If $2^x = 3$, $3^y = 16$, then $xy = \dots\dots\dots$

- a) 2 b) 4 c) -2 d) -4

(5) If: $x^2 + 7x + n$ can be factorize, then $n = \dots\dots\dots$

- a) 8 b) 10 c) 18 d) 49

(6) If: $0.05 \times 0.02 = 10^x$ then $x = \dots\dots\dots$

- a) -4 b) 0 c) 2 d) 4

[Q2] Complete each of the following:1) If $x^2 + ax + 25$ is perfect square, then $a = \dots\dots\dots$ 2) The S.S : $x(x - 3) = 5x$ in R is $\dots\dots\dots$ 3) If $2x^2 - 3x - 35 = (2x + m)(x - 5)$, then $m = \dots\dots\dots$ 4) $(x - 3)^0 = 1$ where $x \neq \dots\dots\dots$ 5) If $(\frac{1}{2})^x = 5$ then $8^{-x} = \dots\dots\dots$

[Q3] Factorize completely each of the following :

① $25x^2 - 49$

③ $x^2 - 8x + 12$

② $2x^3 + 250$

④ $ab + 4b + 5a + 20$

[Q4]

A) Find the length and width of rectangle its area is 40cm^2 and its length is 3cm. more than its width?

B) find the value of x in each equation of the following :

① $(\sqrt{3})^{x-1} = 9$

② $5^{x-1} \times 7^{1-x} = 1$

[Q5]

A) If $\frac{49^x \times 25^{2x} \times 3^{4x}}{(\sqrt{49})^{-x} \times (15)^{4x}} = 343$, then find the value of : 6^{2x}

B) in the experiment of composing 2-digit different number from the digits $\{1, 2, 3, 4\}$. find the sample space then Find the probability of getting :

① a number its tens is even

② a number both units and tens are even

End of the questions

ALGEBRA – MODEL No**6****[Q1] Choose the correct answer:**(1) If $x^2 + 10x + k$ is perfect square, then $k = \dots\dots\dots$

- a) 100 b) 25 c) 20 d) 10

(2) The solution set of : $3x^2 = 3x$ in R is $\dots\dots\dots$

- a) $\{3, -1\}$ b) $\{-3, 1\}$ c) $\{0, 1\}$ d) $\{1, 3\}$

(3) If $3^x = 5$, $3^y = 7$, then $3^{x+y} = \dots\dots\dots$

- a) 12 b) 15 c) 21 d) 35

(4) If : $x^2 + ax - 12$ can be factorize, then $a = \dots\dots\dots$

- a) 7 b) 8 c) 4 d) 13

(5) Which of the following is true ($x \in R$)

- a) $9^x > 0$ b) $x + 9 > 0$ c) $x^9 > 0$ d) $9x > 0$

(6) If the age of a man now is x year, then his age after 5 years is

- a) $X + 5$ b) $X - 5$ c) $5x$ d) x

[Q2] Complete each of the following:1) If : $k^2 + m^2 = 21$, $km = 3$, then $k + m = \dots\dots\dots$ 2) If $(x + 1)$ is factor of $5x^2 - 2x - 7$, then the other factor is $\dots\dots\dots$ 3) If Sixth of the number $(2^{12} \times 3^{12}) = 6^k$, then $k = \dots\dots\dots$ 4) The S.S : $x^3 + 25x = 0$ in R is $\dots\dots\dots$ 5) If $3^x + 3^x + 3^x = 1$, then $x = \dots\dots\dots$

[Q3] factorize completely each of the following :

A) ① $x^6 - 7x^3 - 8$ ② $16x^2 - a^2 + 6ax - 9x^2$

B) Use factorization to get the value of each of the following easily:

① $(14.06)^2 - 8.12 \times 14.06 + (4.06)^2$ ② $(998)^2 - 4$

[Q4]

A) Find real number that its twice exceed to its multiplicative inverse by 1?

B) find the value of x in each of the following :

① $3^{x-1} = 27$ ② $3^{x-3} = 2^{2x-6}$

[Q5] A) If $\frac{8^x \times 3^{2x}}{18^x} = 64$, then find the value of 4^{-x}

B) A box contains 40 cards numbered from 1 to 40. a card is drawn randomly. Calculate the probability of drawing card carrying :

- ① An even number
- ② A number divisible by 5
- ③ A number is perfect square
- ④ A prim number less than 18



End of the questions

ALGEBRA — MODEL No 7**[Q1] Choose the correct answer:**(1) If : $x^2 - kx + 25$ is perfect square then $k = \dots\dots\dots$

a) 5

b) 25

c) ± 10 d) ± 5 (2) $4^3 + 4^3 + 4^3 + 4^3 = \dots\dots\dots$ a) 4^4 b) $(16)^3$ c) 4^{12} d) 4^{81} (3) If $x = \frac{\sqrt{9}}{\sqrt{3}}$, then $x^{-1} = \dots\dots\dots$ a) $\sqrt{3}$

b) 2

c) $\frac{\sqrt{3}}{\sqrt{2}}$ d) $\frac{\sqrt{3}}{3}$ (4) If : $k - m = 9$, $k + m = 15$ then $k^2 - m^2 = \dots\dots\dots$

a) 135

b) 9

c) 150

d) $\frac{3}{5}$ (5) $2^0 + 2^{-1} - \left(\frac{-1}{\sqrt{2}}\right)^2 = \dots\dots\dots$

a) 2

b) 0

c) 1

d) -1

(6) Quarter of $(\sqrt{2})^{12} = \dots\dots\dots$ a) $(\sqrt{2})^3$ b) 2^3 c) 2^4

d) 12

[Q2] Complete each of the following:

1) $x^2(x+1)(x-1) = (\dots\dots\dots - \dots\dots\dots)(x+1)$

2) $x^2 - 5x + 6 = (\dots\dots\dots - 3)(x - \dots\dots\dots)$

3) The probability of an impossible event = $\dots\dots\dots$

4) $x^3 + 8 = (\dots\dots + 2)(x^2 \dots\dots + 4)$

5) $\sqrt{2} \times (\sqrt{2})^2 \times (\sqrt{2})^3 = \dots\dots\dots$ in the simplest form

[Q3]

- A) In a football league, the probability of a team to win is 0.6 and the probability of a draw is 0.3. If the number of matches supposed to be played by that team is 30 matches. How many matches do you predict the team loses?
- _____

- B) The solution set of: $2x^2 - 5x = 3$ in \mathbb{R} is
- _____

[Q4]

- A) Find in the simplest form: $\frac{2^{2n+1} \times 5^{2n+1}}{10^{2n}}$
- _____

- B) If: $(9)^{x+3} = 3^{x+5}$, then find the value of x ?
- _____

[Q5] Factorize completely each of the following:

① $5x^2 - 3x - 2$

③ $a^2 - b^2c^4$

② $64x^4 + n^4$

④ $x^2 - 2xy + y^2 - z^2$

End of the questions

ALGEBRA — MODEL No 8

8

[Q1] Choose the correct answer:

- (1) If: $a^2 - b^2 = 16$, $b - a = 2$, then $a + b = \dots\dots\dots$
 a) 4 b) -8 c) 8 d) 2
- (2) If: $\sqrt{x+5} = 3$ then $\sqrt{x} = \dots\dots\dots$
 a) 0 b) 2 c) 4 d) 9
- (3) The S S of: $x^2 + 4 = 0$ in R is $\dots\dots\dots$
 a) $\{-4\}$ b) $\{-2, 2\}$ c) $\{-4, 4\}$ d) ϕ
- (4) Sixth of the number $(2^{12} \times 3^{12}) = \dots\dots\dots$
 a) 6^2 b) 6^{11} c) 6^4 d) 6^{23}
- (5) If: $4x^2 + 12x + a$ is perfect square then $a = \dots\dots\dots$
 a) 6 b) 16 c) 1 d) 9
- (6) If: $4^5 = 5$, then $4^{x-1} = \dots\dots\dots$
 a) 1.25 b) 0.125 c) 0.8 d) 0.08

[Q2] Complete each of the following:

- 1) If: $5^{x+3} = 7^{x+5}$, then $x = \dots\dots\dots$
- 2) $(5x - 2y) = (25x^2 + 10xy + y^2) = \dots\dots\dots$
- 3) If: $x = (\sqrt{2} + 3)^5$, $y = (\sqrt{2} - 3)^5$, then $xy = \dots\dots\dots$
- 4) In a mixed school there are 300 pupils, the probability of selecting perfect student is a boy 0.6, then the number of girls is $\dots\dots\dots$
- 5) If: $a^2 + 2ab + b^2 = 25$, then $a + b = \dots\dots\dots$

[Q3] factorize completely each of the following :

A) $4a^4 - 9a^2 + 6a - 1$ ② $49x^2 - 25$

B) What is the real number which its double exceeds its multiplicative inverse by 1 ?

[Q4]

A) find the solution set in $R : (x - 4)^5 = 32$

B) If: $\left(\frac{3}{5}\right)^{x+2} = \frac{125}{27}$ then find the value of x ?

[Q5]

A) If: $3^x = 27$, $4^{x+y} = 1$, then find the value of x and y .

B) A box contains 7 black balls, 8 red balls and 5 white balls. If we draw one ball randomly, find the probability of getting: red ball
blue ball black or white ball

End of the questions

ALGEBRA – MODEL No**9****[Q1] Choose the correct answer:**

- (1) The S.S. in $R : x^2 + 9 = 0$ is
 a) $\{-3\}$ b) $\{3\}$ c) $\{-3, 3\}$ d) ϕ
- (2) If: $a - b = 9$, $a + b = 15$, then $a^2 - b^2 = \dots\dots\dots$
 a) 81 b) 135 c) 144 d) 225
- (3) If: $x^2 + 14x + b$ is perfect square then $b = \dots\dots\dots$
 a) 2 b) 7 c) 14 d) 49
- (4) $\frac{4 \times 2^{-1}}{3^{-1}} = \dots\dots\dots$
 a) 6 b) $\frac{1}{3}$ c) $\frac{1}{2}$ d) $\frac{1}{6}$
- (5) If: 4 times a number is 48, then third of this number is
 a) 16 b) 12 c) 4 d) 8
- (6) If: x is an odd number, then the next odd number is
 a) $X + 1$ b) $X + 2$ c) $X + 3$ d) $X + 4$

[Q2] Complete each of the following:

- 1) If: $6^x = 7$, then $6^{x-2} = \dots\dots\dots$
- 2) The solution set in $R : x^2 = 5x$ is
- 3) Quarter of the number $2^{50} = 2^{\dots\dots\dots}$
- 4) If: $(x + 5)$ is one factor of: $x^3 + 125$ then the other factor is ...
- 5) $1 \text{ L} = \dots\dots\dots \text{ cm}^3$.

[Q3]

A Simplify : $\frac{4^{x+1} \times 9^{x-2}}{6^{2x}}$

B Find the positive real number , if we add its twice to its square the result will be 35 ?

[Q4]

A Factorize : $8y^3 + 1$ $x^2 - 10xy + 25y^2 - 36$

B If : $8^{4x-1} = 32$, then find the value of x ?

[Q5]

A Factorize : $4x^4 + 1$ $3x^2 + 7x + 2$

B In a football league, the probability of a team to win is 0.6 and the probability of a draw is 0.3 .If the number of matches supposed to be played by that team is 30 matches .

How many matches do you predict the team draw ?

How many matches do you predict the team loss ?



End of the questions

ALGEBRA – MODEL No

10

[Q1] Choose the correct answer:

(1) If: $x^3 + 27 = (x + 3)(x^2 + k + 9)$, then $k = \dots\dots\dots$
 a) $-6x$ b) $-3x$ c) $3x$ d) $6x$

(2) If: $x^2 + y^2 = 7$, $xy = 3$, $(x - y)^2 = \dots\dots\dots$
 a) -1 b) 1 c) ± 1 d) 10

(3) If: $x^3 y^{-3} = 8$, then $\frac{y}{x} = \dots\dots\dots$

a) $\frac{1}{512}$ b) $\frac{1}{8}$ c) $\frac{1}{2}$ d) 2

(4) If: $3^x = 5$, then $27^x = \dots\dots\dots$

a) 9 b) 25 c) 125 d) 729

(5) If: $(x - 1)$ is one factor of: $x^2 - 4x + 3$ then the other factor is ...

a) $X + 3$ b) $X - 3$ c) $X + 1$ d) $X - 4$

(6) If: $x^2 + 4x + a$ is perfect square then $a = \dots\dots\dots$

a) 3 b) 4 c) 8 d) 16

[Q2] Complete each of the following:

1) If: $x + y = 7$, $x^2 - y^2 = 35$, $y - x = \dots\dots\dots$

2) The probability of an impossible event = $\dots\dots\dots$

3) If: $2^x = 5$, $2^{-y} = 3$, $2^{x+y} = \dots\dots\dots$

4) complete in the same pattern: $1, 4, 9, 16, 25, \dots\dots\dots$

5) If: $(25)^2 - (15)^2 = 10x$, then $x = \dots\dots\dots$

[Q3]

A) prove that : $\frac{(\sqrt{2})^2 \times 2^{1-x} \times 12^{2x-1}}{8^x \times 9^x} = \frac{1}{3}$

B) Two consecutive odd numbers their sum is 130 . find the two numbers ?

[Q4]

A) Factorize: ① $x^2 - 7x + 12$ ② $4x^4 + y^4$


B) If : $\frac{7^x \times 6^x}{14^2} = 3^{2-m}$, then find the value of $x + m$?

[Q5]

A) Factorize : ① $x^4 - 8x$ ② $ax - ay + x - y$

B) A basket contains balls numbered from 1 to 15 . a ball is drawn randomly. Calculate the probability of drawing ball carrying :

- ① An even number
- ② A number divisible by 3
- ③ A prim number


End of the questions

Q1) ① $X - y = \frac{X^2 - y^2}{X + y} = \frac{24}{8} = 3$

② $(X - 5)^0 = 1$

Then $X \in \mathbb{R} - \{0\}$

③ $X^2 - 4X = 0$

$X(X - 4) = 0$

$X = 0 \quad | \quad X = 4$

$S = \{0, 4\}$

④ $P(\text{sure event}) = 1$

⑤ $a = (4)^3 = 64$

⑥ $4^3(1+1+1+1) = 4^3 \times 4 = 4^4$

2

① $K = \frac{(100X^2)}{4(X^2)} = 25$

② $\left(\frac{X}{y}\right)^3 = \left(\frac{2}{1}\right)^3 \Rightarrow \frac{X}{y} = 2$

③ $2^y \times 5^y = 100 = 10^2$
 $\therefore y = 2$

④ $3(a^3 - b^3) = 3(a - b)(a^2 + ab + b^2)$
 $= 3 \times 7 \times 9 = 189$

⑤ $(8)^x = (2^3)^x = (2^x)^3 = 3^3 = 27$

3

① $5X^2 - 25 = 5(X^2 - 5)$
 $= 5(X - \sqrt{5})(X + \sqrt{5})$

② $X^2 - 3X - 28 =$
 $(X - 4)(X + 7)$

③ $8 - X^3 = (2 - X)(4 + 2X + X^2)$

④ $4X^2 - 12X + 9 = (2X - 3)^2$

Q4

A Assume $\begin{cases} \text{length} = X + 3 \\ \text{width} = X \end{cases}$

Area = length \times width

$40 = X(X + 3)$

$\therefore X^2 + 3X - 40 = 0$

$(X + 8)(X - 5) = 0$

$X = -8$

Rejected
 X

$X = 5$

$\therefore \text{width} = 5 \text{ cm}$

$\text{length} = X + 3$

$= 5 + 3 = 8 \text{ cm}$

$\therefore \text{Perimeter} = 2(5 + 8) = 26 \text{ cm}$

B) $2^{X-5} = 3^{2X-10} = 3^{2(X-5)} = 9^{X-5}$

$2 \neq 9$

$X - 5 = 0 \Rightarrow \boxed{X = 5}$

* $(X + 1)^5 = 32 = 2^5$

$X + 1 = 2 \Rightarrow \boxed{X = 1}$

5 A) $\frac{4^{X+1} \times 9^{2-X}}{6^{2X}}$

$= \frac{(2^2)^{X+1} \times (3^2)^{2-X}}{2^{2X} \times 3^{2X}} = \frac{2^{2X+2} \times 3^{4-2X}}{2^{2X} \times 3^{2X}}$

$= 2^{2X+2-2X} \times 3^{4-2X-2X} = 2^2 \times 3^{4-4X}$

$= \boxed{4 \times 3^{4-4X}}$

when $X = 1$

magnitude $= 4(3)^{4-4} = 4(3)^0 = 4$

B) $S = \{1, 2, 3, 4, \dots, 30\}$

① $P(A) = \frac{15}{30} = \frac{1}{2}$

② $P(B) = \frac{6}{30} = \frac{1}{5}$

③ $P(C) = \frac{5}{30} = \frac{1}{6}$

$A = \{1, 3, 5, 7, \dots, 29\}$

$B = \{5, 10, 15, 20, 25, 30\}$

$C = \{1, 4, 9, 16, 25\}$

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Model ② Algebra

$$① x^2 - y^2 = (x-y)(x+y) = 2 \times 7 = 14$$

$$② K = \pm 2\sqrt{9x^2}\sqrt{4} = \pm 12x$$

$$\therefore K = 12$$

$$③ 6^{x+1} = 6^x \times 6^1 = 11 \times 6 = 66$$

$$④ x^2 = -1 \Rightarrow x = \pm\sqrt{-1} \Rightarrow s.s = \emptyset \notin \mathbb{R}$$

$$⑤ 2x^2 + 3x + 1 = (2x+1)(x+1)$$

$$⑥ \frac{2^{12} \times 5^{12}}{6^1} = \frac{6^{12}}{6^1} = 6^{11}$$

$$Q_2 ① A = \{2, 3, 5\} \Rightarrow P(A) = \frac{3}{6} = \frac{1}{2}$$

$$② \left(\frac{x}{y}\right)^4 = (2)^4 \Rightarrow \frac{x}{y} = 2$$

$$③ 2^{x-y} = \frac{2^x}{2^y} = \frac{15}{15} = 1$$

$$④ (x^2 - xy + y^2)(x+y) = (x^3 + y^3)$$

$$\therefore x^2 - xy + y^2 = \frac{24}{8} = 3$$

$$⑤ 1 - 0.4 = 0.6$$

$$③ ① y(x-5) + 6(x-5)$$

$$(x-5)(y+6)$$

$$② x^2 + 7x + 6 = (x+6)(x+1)$$

$$③ x^3 - 125 = (x-5)(x^2 + 5x + 25)$$

$$④ 9x^2 - 16 = (3x-4)(3x+4)$$

$$Q_4 (A) \text{ Assume number} = x$$

$$\text{its square} = x^2$$

$$\therefore x^2 = 3x + 40$$

$$x^2 - 3x - 40 = 0$$

$$(x+5)(x-8) = 0$$

$$x = -5 \mid x = 8$$

rejected

$$\therefore \text{number is } \boxed{8}$$

$$③ x + x^{-1} = \sqrt{5} \Rightarrow x + \frac{1}{x} = \sqrt{5}$$

$$① x^2 + x^{-2} = x^2 + \frac{1}{x^2}$$

$$\therefore \left(x + \frac{1}{x}\right)^2 = [\sqrt{5}]^2 \quad \text{بالترتيب}$$

$$x^2 + 2 + \frac{1}{x^2} = \sqrt{5} \times \sqrt{5}$$

$$\therefore x^2 + \frac{1}{x^2} = 5 - 2 = 3$$

$$② x^3 + x^{-3} = \left(x + \frac{1}{x}\right)\left(x^2 - 1 + \frac{1}{x^2}\right)$$

$$= \sqrt{5}(3-1) = 2\sqrt{5}$$

$$Q_5 A)$$

$$\frac{8^x \times 9^x}{18^x} = 64$$

$$\frac{2^{3x} \times 3^x}{2^x \times 3^x} = 64 \Rightarrow 2^{3x-x} = 64$$

$$\therefore 2^{2x} = 2^6 \Rightarrow 2x = 6$$

$$x = 3$$

$$\therefore 4^{-x} = 4^{-3} = \frac{1}{4^3} = \frac{1}{64}$$

$$B)$$

$$\text{probability of win} = 0.7$$

$$\sim \sim \text{draw} = 0.2$$

$$\sim \sim \text{loss} = 1 - 0.7 - 0.2 = 0.1$$

$$① \therefore \text{number of matches wins}$$

$$= 0.7 \times 30 = 21 \text{ matches}$$

$$② \therefore \text{number of matches loss}$$

$$= 0.1 \times 30 = 3 \text{ matches}$$

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Q1

$$① 3^x(1+1+1) = 3^x \times 3 = 3^{x+1}$$

$$② K = \pm 2(x)(6) = \pm 12x$$

$$\boxed{K = \pm 12}$$

$$③ K=49 \Rightarrow x^2+14x+49$$

$$(x+7)(x+7) = (x+7)^2$$

$$④ (2^x)^y = 2 \Rightarrow (2)^{xy} = 2^1$$

$$xy = 1$$

$$⑤ x^2 = 1 \Rightarrow x = \pm 1 \Rightarrow \{1, -1\}$$

$$⑥ (x-y)(a+b) = 3 \times 5 = 15$$

Q2) ① $P(\text{even}) = \frac{2}{5}$

$$② 2^{x-5} = (5-3) = 2^1$$

$$x-5 = 1 \Rightarrow x = 6$$

$$③ \frac{(\sqrt{2})^{12}}{4} = \frac{(2^{\frac{1}{2}})^{12}}{2^2} = \frac{2^6}{2^2} = 2^4 = 16$$

$$④ x-y = \frac{x^2-y^2}{x+y} = \frac{12}{3} = 4$$

⑤ Zero

Q3 ① $8x^3+27$

$$= (2x+3)(4x^2-6x+9)$$

$$② 2x^2-18 = 2(x^2-9)$$

$$= 2(x-3)(x+3)$$

$$③ x^2+7x+12 = (x+4)(x+3)$$

$$④ ab-3b+5a-15$$

$$b(a-3)+5(a-3)$$

$$(a-3)(b+5)$$

Q4) [A] Assume Number = x

$$x^2+3x=18$$

$$x^2+3x-18=0$$

$$(x+6)(x-3) =$$

$$x = -6 \quad | \quad x = 3$$

rejected

Number is 3

ب) $(10.6)^2 - 1.2 \times 10.6 + (10.6)^2$

$(10.6)[(1.6) - 1.2 + 10.6]$

$= 10.6 \times 20 = 212$

$$98 \times (102) = (100-2)(100+2)$$

$$= (100)^2 - (2)^2$$

$$= 10000 - 4 = 9996$$

Q5) A

$\therefore R.H.S = \frac{1}{27}$

$\therefore L.H.S$

$$\frac{27^{x-1} \times 8^x}{(2\sqrt{2})^{2x} \times (3\sqrt{3})^{2x}}$$

$$= \frac{27^x \times 27^{-1} \times 8^x}{[(2\sqrt{2})^2]^x \times [(3\sqrt{3})^2]^x} = \frac{27^x \times 27^{-1} \times 8^x}{8^x \times 27^x}$$

$$= 27^{-1} = \frac{1}{27}$$

$$\therefore L.H.S = R.H.S$$

⑥ $P(\text{succed in math}) = \frac{30}{40} = \frac{3}{4}$

$$P(\text{failur in science}) = \frac{40-24}{40}$$

$$= \frac{16}{40} = \frac{2}{5}$$

##

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model (4) Algebra

Q1

$$① 3x^0 = 3x^1 = 3$$

$$② \frac{(x-3y)}{1} = \frac{x^2 - 5xy + 6y^2}{(x-2y)} = \frac{10}{5} = 2$$

$$③ 2^{20}(1+2) = 3 \times 2^{20}$$

$$④ K=5 \Rightarrow \text{By Trying}$$

$$5x^2 + 6x - 27 = (x+3)(5x-9)$$

$$⑤ x=5 \Rightarrow (5)^2 - 6(5) + n = 0$$

$$⑥ \frac{5^{x+2}}{5^x} - \frac{5^{x+1}}{5^x} = 5^2 - 5^1 = 20$$

Q2 ① $(k+m)^2 = k^2 + 2km + m^2$
 $= k^2 + m^2 + 2km$

$$= 21 + 2(3) = 27$$

$$② 5x^2 - 2x - 7 = (x+1)(5x-7)$$

$\therefore (5x-7)$ other factor

$$③ 3^x(3^1) = 1 \Rightarrow 3^{x+1} = 1 = 3^0$$

$$\therefore x+1=0 \Rightarrow x=-1$$

$$④ Kx^2 = \frac{400x^2}{4(25)} = 4x^2$$

$$\therefore K=4$$

$$⑤ x(a+b) + y(a+b)$$

$$(a+b)(x+y) = 5 \times 3 = 15$$

Q3 ① $x^3 - 8 = (x-2)(x^2 + 2x + 4)$

$$② 9x^2 - 36y^4 = (3x-6y)(3x+6y)$$

$$③ \text{بوجود تبدیل با ۱۰}$$

$$2x^2 - 10xy + 8y^2$$

$$2(x^2 - 5xy + 4y^2)$$

$$= 2(x-y)(x-4y)$$

$$④ (x-y)(x+y) + 5(x+y)$$

$$(x+y)(x-y+5)$$

Q4 [A] Assume Number X
 $S \quad x+2$

$$x^2 + (x+2)^2 = 74$$

$$x^2 + x^2 + 4x + 4 - 74 = 0$$

$$2x^2 + 4x - 70 = 0 \quad \div 2$$

$$x^2 + 2x - 35 = 0$$

$$(x-5)(x+7)$$

$$x=5 \quad | \quad x=-7$$

$$x+2=7 \quad | \quad x+2=-5$$

\therefore Two numbers are 5 or -5
 $5+7$ or $-5-7$

$$⑤ 2[(26.18)^2 - (23.82)^2]$$

$$= 2[(26.18 + 23.82)(26.18 - 23.82)]$$

$$= 2 \times 50 \times 2.36 = 236$$

$$⑥ ① 3^{x+1} = 81 = 3^4$$

$$x+1=4 \Rightarrow x=3$$

$$② 4^{x+y} = 1 \Rightarrow 4^{3+y} = 1 = 4^0$$

$$3+y=0 \Rightarrow y=-3$$

$$③ S = \{1, 2, 3, \dots, 24\}$$

$$* P(A) = \frac{4}{24} = \frac{1}{6}$$

$$A = \{6, 12, 18, 24\}$$

$$B = \{1, 4, 9, 16\}$$

$$P(B) = \frac{4}{24} = \frac{1}{6}$$

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model [5] Algebra

Q1

$$1) x^2 - m = (x-7)(x+7) = x^2 - 49$$

$$m = 49$$

$$2) x^3 + y^3 = 15 \Rightarrow x^2 - xy + y^2 = \frac{15}{3} = 5$$

$$3) x=2 \Rightarrow (4-6x+K=.) \Rightarrow K=8$$

$$4) 2^x = 3 \text{ and } 3^y = 16 \Rightarrow (2^x)^y = 16 = 2^4 \Rightarrow xy = 4$$

$$5) n = 10 \Rightarrow x^2 + 7x + 10 = (x+2)(x+5)$$

$$6) \frac{5}{100} \times \frac{2}{100} = 10^x \Rightarrow \frac{10}{10000} = 10^x \Rightarrow (10)^{-3} = 10^x$$

$$x = -3 \text{ not exist in choice}$$

Q2

$$1) a = \pm 2(x)(5) = \pm 10x$$

$$2) x^2 - 3x - 5x = 0 \Rightarrow x^2 - 8x = 0$$

$$x(x-8) = 0 \Rightarrow x = 0, 8 \text{ in } \mathbb{R}$$

$$3) 2x^2 - 3x - 35 = 2x^2 - 10x + mx - 5m$$

$$-3x - 35 = x(-10+m) - 5m$$

$$-3x = x(-10+m) \Rightarrow -3 = -10+m$$

$$m = 7$$

$$\text{or } [-35 = -5m] \Rightarrow m = 7$$

or By factorize at first quickly

$$4) (x-3)^0 = 1 \Rightarrow x \neq 3$$

$$5) 8^{-x} = \frac{1}{8^x} = \left(\frac{1}{8}\right)^x = \left(\frac{1}{2}\right)^{3x}$$

$$= \left[\left(\frac{1}{2}\right)^x\right]^3 = 5^3 = 125$$

$$6) 25x^2 - 49 = (5x-7)(5x+7)$$

$$2) 2x^3 + 250 = 2(x^3 + 125)$$

$$= 2(x+5)(x^2 - 5x + 25)$$

$$3) x^2 - 8x + 12 = (x-2)(x-6)$$

$$4) 9b + 4b + 5a + 20$$

$$b(a+4) + 5(a+4)$$

$$(a+4)(b+5)$$

Q4

A) Assume width x , length $= x+3$

$$(x)(x+3) = 40$$

$$x^2 + 3x - 40 = 0 \Rightarrow (x-5)(x+8) = 0$$

$$x = 5$$

$$x = -8$$

$$x+3 = 8$$

rejected

$$\therefore \text{width} = x = 5 \text{ cm}$$

$$\text{length} = x+3 = 8 \text{ cm}$$

$$B) 1) (\sqrt{3})^{x-1} = 9 = 3^2 = (\sqrt{3})^4$$

$$\therefore x-1 = 4 \Rightarrow x = 5$$

$$2) 5^{x-1} \times 7^{1-x} = 1$$

$$5^{x-1} \times \left(\frac{1}{7}\right)^{x-1} = 1 \Rightarrow (5 \times \frac{1}{7})^{x-1} = 1$$

$$35^{x-1} = 35^0 \Rightarrow x-1 = 0 \Rightarrow x = 1$$

Q5

$$\frac{49^x \times 25^{2x} \times 3^{4x}}{(\sqrt{49})^{-x} \times (15)^{4x}} = \frac{7^{2x} \times 5^{4x} \times 3^{4x}}{7^{-x} \times 3^{4x} \times 5^{4x}}$$

$$= 7^{2x - (-x)} = 7^{3x} = 343 = 7^3$$

$$\therefore 3x = 3 \Rightarrow x = 1$$

$$\therefore 6^{2x} = 6^{(2)} = 36 \neq$$

$$B) S = \{12, 13, 14, 21, 23, 24, 31, 32, 34, 41, 42, 43\} \quad n(S) = 12$$

$$1) A = \{21, 41, 42, 23, 43, 24\}$$

$$P(A) = \frac{6}{12} = \frac{1}{2}$$

$$2) B = \{42, 24\} \Rightarrow P(B) = \frac{2}{12} = \frac{1}{6}$$

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model (6) Algebra

Q1 ① $K = \frac{100X^2}{4X^2} = 25$

② $3X^2 - 3X = 0 \Rightarrow 3X(X-1) = 0$

$S.S = \{0, 1\}$

③ $3^{x+y} = 3^x \times 3^y = 5 \times 7 = 35$

④ $a = 4 \Rightarrow$ عدد من حاصل ضرب 12 والفرد بينهم a
 $\Rightarrow a = 11 \in 1 \times 12$
 $a = 4 \in 2 \times 6$
 $a = 1 \in 3 \times 4$

⑤ $g^x > 0$
 $x \in \mathbb{R}$
 $g^0 = 1 > 0$
 $g^{-1} = \frac{1}{g} > 0$
 $g^1 = g > 0$

⑥ $X + 5$

Q2

① $(k+m)^2 = k^2 + 2km + m^2 = 21 + 2 \times 3 = 27$

$\therefore k+m = \pm \sqrt{27} = \pm 3\sqrt{3}$

② $5x^2 - 2x - 7 = (x+1)(5x-7)$

③ $\frac{2^{12} \times 3^{12}}{6} = 6^k \Rightarrow \frac{6^{12}}{6^1} = 6^k$

$\therefore 6^{11} = 6^k \Rightarrow k = 11$

④ $X(X^2 + 25) = 0$
 $\Rightarrow X = 0$
 $\Rightarrow X = \pm \sqrt{-25} \notin \mathbb{R}$
 $\therefore S.S = \{0\}$

⑤ $3^{(3)^x} = 1 \Rightarrow 3^{x+1} = 1 = 3^0 \Rightarrow x+1 = 0$
 $x = -1$

Q3 ① $X^6 - 7X^3 - 8 =$

$(X^3 - 8)(X^3 + 1) = (X-2)(X^2 + 2X + 4)(X+1)(X^2 - X + 1)$

② $16X^2 - a^2 + 6aX - 9X^2$

$16X^2 - (a^2 - 6aX + 9X^2)$

$16X^2 - (a - 3X)^2$

$(4X + a - 3X)(4X - a + 3X)$

③ ① $(14.06 - 4.06)^2 = (10)^2 = 100$

② $(998)^2 - 4 = (998-2)(998+2)$
 $= 1000 \times 996 = 996000$

④ A) Assume number is X

$2X - \frac{1}{X} = 1 \Rightarrow X^2 - X - 1 = 0$

$2X^2 - X - 1 = 0 \Rightarrow (2X+1)(X-1)$
 $X = -\frac{1}{2} \mid X = 1$

\therefore The number is 1 or $-\frac{1}{2}$

⑤ ① $3^{X-1} = 27 = 3^3 \Rightarrow X-1 = 3 \Rightarrow X = 4$

② $3^{X-3} = 2^{X-6} = \frac{2(X-3)}{2} = 4^{X-3}$

$2 \neq 3$
 $\Rightarrow X-3 = 0 \Rightarrow X = 3$

⑤ ④ $\frac{8^X \times 3^{2X}}{18^X} = 64$

$\frac{8^X \times 9^X}{2^X \times 3^X} = 64 \Rightarrow \left(\frac{8}{2}\right)^X = 64$

$4^X = 64 \Rightarrow 4^{-X} = \frac{1}{64}$

⑥ $S = \{1, 2, 3, 4, \dots, 40\}$

① $A = \{2, 4, 6, 8, 10, \dots, 40\}$
 $P(A) = \frac{20}{40} = \frac{1}{2}$

② $B = \{5, 10, 15, 20, 25, 30, 35, 40\}$
 $P(B) = \frac{8}{40} = \frac{1}{5}$

③ $C = \{1, 4, 9, 16, 25, 36\}$
 $P(C) = \frac{6}{40} = \frac{3}{20}$

④ $D = \{2, 3, 5, 7, 11, 13, 17\}$
 $P(D) = \frac{7}{40}$

⑪

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model 7 Algebra

Q1

$$(1) K = \pm 2(X)(5) = \pm 10X$$

$$K = \pm 10$$

$$(2) 4^3(1+1+1+1) = 4^3 \times 4 = 4^4$$

$$(3) X^{-1} = \frac{\sqrt{3}}{\sqrt{9}} \times \frac{\sqrt{9}}{\sqrt{9}} = \frac{\sqrt{27}}{9} = \frac{3\sqrt{3}}{9} = \frac{\sqrt{3}}{3}$$

$$(4) k^2 - m^2 = (k-m)(k+m) \\ = 9 \times 15 = 135$$

$$(5) 1 + \frac{1}{2} - (\frac{1}{2}) = 1$$

$$(6) \frac{\sqrt{2}^{12}}{4} = \frac{2^6}{2^2} = 2^4$$

Q2

$$(1) X^2(X+1)(X-1)$$

$$= X^2(X-1)(X+1) = (X^3 - X^2)(X+1)$$

$$(2) (X-3)(X-2)$$

$$(3) \text{Zero}$$

$$(4) (X+2)(X^2-2X+4)$$

$$(5) (\sqrt{2})^6 = 2^3 = 8$$

Q3

$$P(\text{win}) = 0.6$$

$$P(\text{Draw}) = 0.3$$

$$P(\text{losses}) = 1 - 0.6 - 0.3 = 0.1$$

number of losses matches =

$$P(\text{losses}) \times \text{All number of matches}$$

$$= 0.1 \times 30 = 3 \text{ matches}$$

Q3

$$2X^2 - 5X - 3 = 0$$

$$(2X+1)(X-3) = 0$$

$$X = -\frac{1}{2} \quad | \quad X = 3$$

$$S.S = \{3, -\frac{1}{2}\}$$

Q4

A

$$\frac{2^{2n+1} \times 5^{2n+1}}{10^{2n}}$$

$$= \frac{(10)^{2n+1}}{(10)^{2n}}$$

$$= (10)^{2n+1-2n} = (10)^1 = 10$$

Q5

$$(9)^{X+3} = 3^{X+5}$$

$$(3^2)^{X+3} = 3^{X+5}$$

$$3^{2X+6} = 3^{X+5} \Rightarrow 3=3$$

$$\therefore 2X+6 = X+5 \Rightarrow X = -1$$

Q6

$$(1) 5X^2 - 3X - 2 = (X-1)(5X+2)$$

$$(2) a^2 - b^2c^4 = (a-bc^2)(a+bc^2)$$

$$(3) 64X^4 + n^4 = (8X^2 + n^2)^2 - 16X^2n^2 \\ = [8X^2 + n^2 - 4Xn][8X^2 + n^2 + 4Xn]$$

$$(4) X^2 - 2Xy + y^2 - Z^2$$

$$(X-y)^2 - Z^2$$

$$(X-y-Z)(X-y+Z)$$

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Model (8) Algebra

Q1 ① $a^2 - b^2 = (a-b)(a+b)$
 $16 = (-2)(a+b)$
 $a+b = \frac{16}{-2} = -8$

② $\sqrt{x+5} = 3$
 $x+5=9 \Rightarrow x=4 \Rightarrow \sqrt{x}=2$

③ $x^2 = -4 \Rightarrow x = \pm\sqrt{-4} \notin \mathbb{R}$
 $\sim \text{S.S} = \emptyset$

④ $\frac{2^{12} \times 3^{12}}{6} = \frac{6^{12}}{6} = 6^{11}$

⑤ $a = \frac{144x^2}{4(4x^2)} = 9$

⑥ $4^{x-1} = 4^x \times 4^{-1} = 5 \times \frac{1}{4} = \frac{5}{4} = 1.25$

$4^x = 5$ بعد تصحيح في لقول بالخط

Q2 ① $5^{x+3} = 7^{x+3}$ يوجد تصحيح في لقول بالخط
 $x+3=0 \Rightarrow x=-3$

② $125x^3 - 8y^3$

③ $xy = (\sqrt{2}+3)(\sqrt{2}-3) = (2-9)^5$
 $= (-7)^5 = -78125$

④ $(1-0.6) \times 300 = 120$ girls

⑤ $a^2 + 2ab + b^2 = 25 \Rightarrow (a+b)^2 = 25$
 $a+b = \pm 5$

Q3 ① A) $4a^4 - (9a^2 - 6a + 1)$
 $= 4a^4 - (3a-1)^2$
 $(2a^2 + 3a - 1)(2a^2 - 3a + 1)$

② $(7x-5)(7x+5)$

B) Assume number is x

$2x - \frac{1}{x} = 1$ *x

$2x^2 - 1 = x \Rightarrow 2x^2 - x - 1 = 0$
 $(2x+1)(x-1)$
 $x = -\frac{1}{2} \quad | \quad x = 1$

\therefore The number is 1 or $-\frac{1}{2}$

Q4 $(x-4)^5 = 32 = 2^5$

Power = Power \Rightarrow Base = Base

$x-4=2 \Rightarrow x=6$

B) $(\frac{3}{5})^{x+2} = \frac{125}{27} = (\frac{5}{3})^3 = (\frac{3}{5})^{-3}$

$x+2=-3 \Rightarrow x = -3-2 = -5$

Q5 A) $3^x = 27 = 3^3$
 $x=3$

$4^{x+y} = 1 \Rightarrow 4^{3+y} = 1 = 4^0$

$\therefore 3+y=0 \Rightarrow y=-3$

B) $S = \{7 \text{ Black ball, } 8 \text{ red balls, } 5 \text{ white balls}\}$

number of balls = $7+8+5 = 20$ Balls

$P(\text{red ball}) = \frac{8}{20} = \frac{2}{5}$

$P(\text{blue ball}) = \frac{0}{20} = 0$

$P(\text{black or white}) = \frac{12}{20} = \frac{3}{5}$

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model (g) Algebra

① $x^2 = -9 \Rightarrow s.s = \emptyset$

② $a^2 - b^2 = (a+b)(a-b)$
 $= 9 \times 15 = 135$

③ $b = \frac{14 \times 14 \times 2}{4 \times 2} = 49$

④ $4 \times \frac{1}{2} = \frac{4 \times 3}{2} = 6$

⑤ $4x = 48 \Rightarrow x = 12$
 $\frac{1}{3}x = \frac{1}{3} \times 12 = 4$

⑥ odd number is x
 the next odd = $x+2$

⑦ ① $6^{x-2} = 6^x \times 6^{-2}$
 $= 7 \times \frac{1}{36} = \frac{7}{36}$

② $x^2 - 5x = 0$
 $x(x-5) = 0$
 $s.s = 0, 5$

③ $\frac{2^{50}}{2^2} = 2^{48}$

④ $x^3 + 125 = (x+5)(x^2 - 5x + 25)$

⑤ $1L = 1000 \text{ cm}^3$

hint $m^3 \xrightarrow{\times 10^3} L \xrightarrow{\times 10^3} \text{cm}^3$
 $(dm)^3 \rightarrow \text{cm}^3$
 (mL)

① $\frac{4^{x+1} \times 9^{x-2}}{6^{2x}} = \frac{2^{2x+2} \times 3^{2x-4}}{2^{2x} \times 3^{2x}}$
 $= \frac{2^{2x+2-2x} \times 3^{2x-4-2x}}{1} = 2^2 \times 3^{-4}$
 $= 4 \times \frac{1}{81} = \frac{4}{81}$

② number = x
 $2x + x^2 = 35$
 $x^2 + 2x - 35 = 0$
 $(x-5)(x+7) = 0$
 $x = 5 \quad | \quad x = -7$
 number is 5 rejected

Q11

$8y^3 + 1 = (2y+1)(4y^2 - 2y + 1)$

$x^2 - 10xy + 25y^2 - 36$

$(x-5y)^2 - 36 = [x-5y-6][x-5y+6]$

③ $8^{4x-1} = 32 \Rightarrow 2^{12x-3} = 2^5$

Base = Base \Rightarrow Power = Power

$12x-3=5 \Rightarrow 12x=8$
 $x = \frac{8}{12} = \frac{2}{3}$

④ ① $4x^4 + 1$
 $(2x^2+1)^2 - 4x^2$
 $(2x^2+1-2x)(2x^2+1+2x)$

② $3x^2 + 7x + 2$
 $(3x+1)(x+2)$

③ $P(\text{win}) = 0.6$
 $P(\text{draw}) = 0.3$
 $P(\text{loss}) = 1 - 0.6 - 0.3 = 0.1$

number of matches Draw = $0.3 \times 30 = 9$ matches

$n_{\text{loss}} = 0.1 \times 30 = 3 \text{ matches}$

$n_{\text{win}} = 0.6 \times 30 = 18 \text{ matches}$

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model (10) Algebra

Q1 ① $-3x = k$

② $(x-y)^2 = x^2 + y^2 - 2xy$
 $= 7 - 2(3) = 1$

③ $\left(\frac{x}{y}\right)^3 = (2)^3 \Rightarrow \frac{x}{y} = 2$

$\therefore \frac{y}{x} = \frac{1}{2}$
 ④ $(27)^x = (3)^{3x} = (3^x)^3 = 5^3$
 $= 125$

⑤ $x^2 - 4x + 3 = (x-1)(x-3)$

⑥ $a = \frac{16x^2}{4x^2} = 4$

Q2 ① $x^2 - y^2 = (x-y)(x+y)$
 $35 = (x-y) \times 7$
 $x-y = 5 \Rightarrow y-x = -5$

Belong $y-x = -(x-y) = -5 \checkmark$

② zero

③ $2^{x+y} = 2^x \times 2^y = 5 \times \frac{1}{3} = \frac{5}{3}$

④ 36, 49

⑤ $(25-15)(25+15) = 10 \times 40 = 400$
 $10 \times 40 = 400$
 $x = 40$

Q3 L.H.S = $\frac{1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 \times 10 \times 11 \times 12 \times 13 \times 14 \times 15 \times 16 \times 17 \times 18 \times 19 \times 20}{2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8 \times 9 \times 10 \times 11 \times 12 \times 13 \times 14 \times 15 \times 16 \times 17 \times 18 \times 19 \times 20}$
 $= 2$

R.H.S = $\frac{1}{3} \Rightarrow \therefore$ L.H.S = R.H.S

Q3 First number = x , next number = $x+2$

$x + x + 2 = 130$
 $2x = 128 \Rightarrow x = 64$

\therefore First number = 64

Second n = 66

Q4 ① $x^2 - 7x + 12$
 $(x-3)(x-4)$

② $4x^4 + y^4$
 $(2x^2 + y^2)^2 - 4x^2y^2$
 $(2x^2 + y^2 - 2xy)(2x^2 + y^2 + 2xy)$

③ $\frac{7^x \times 6^x}{14^x} = 3^{2-m}$

④ $\left(\frac{7 \times 6}{14}\right)^x = 3^{2-m}$
 $3^x = 3^{2-m}$

$x = 2-m \Rightarrow x+m = 2$

Q5 ① $x^4 - 8x = x(x^3 - 8)$
 $= x(x-2)(x^2 + 2x + 4)$

② $ax - ay + x - y$
 $a(x-y) + (x-y)$
 $(x-y)(a+1)$

③ $S = \{1, 2, 3, \dots, 15\}$

$P(\text{even number}) = \frac{7}{15}$

$P(\text{number is divisible by 3}) = \frac{5}{15} = \frac{1}{3}$

$P(\text{Prime number}) = \frac{6}{15} = \frac{2}{5}$

eng. Abdel Aziz Akk

Best wishes

بالخير والبركات (دوني)

Q9

كيفية طباعة صفحات معينة من ملف معين

مثلا ازاي نطبع الصفحات من صفحة 4 الى صفحة 9

